Introduction to estrogen and cancer risk

Well TJ Hills. I am so excited for this conversation. This is such a hugely important conversation. a lot of people don't understand really fully about their their hormones, their estrogen and, You.

Yeah, yeah. And the individuality and how we process all of that and, that that's where you really delved into. So thank you so much for being here. Thank you very much for having me.

I'm honored and honored to participate in anything you're doing. Thank you. And so yeah, let's start just estrogen, good or bad. Well, that completely depends on you, right?

You and your genes and what what stage of life you're in and whether or not you have cancer. And, you know, it's multifactorial. And that's what makes it such a difficult, difficult topic.

Not just to talk about, but to study. So when, when people, women, they want to check and see my prone to breast cancer, they talk about it like the genes.

But but nobody goes into a lot of the genetic, some of the other genetic dysfunctions that play such a huge role in our ability to to regulate our hormones.

Yeah. Well, why do you think that is so? You know, less measuring. Well, that's a there's hereditary genes. There's predisposition to cancer genes which have just started kind of being researched and kind of being figured out.

And but the vast majority of people with breast cancer are estrogen sensitive. Cancers have no hereditary cancer genes.

Genetics, hereditary risk, and environmental factors

None of these panels, for example, a celebrity recently came out with just the other day talking about how she had just taken a 90 gene panel, came out with no mutations, and a month later was diagnosed with breast cancer.

And those are the people who are actually looking. Maybe they're predisposed to it in their family, but but most cancer patients don't have any hereditary cancer genes.

I don't have any. Both my parents who were later diagnosed with estrogen sensitive cancers, they didn't have a single solitary one. And their entire genomes were actually examined.

My sisters have had it. No one, no one has it. And so I think it's really important to look at other factors, environmental factors, and how we handle all of the stressors that we're exposed to as women in particular, which is why I focus on estrogen, because it's such an important factor in our reproductive health, which which is from birth to death.

And, and the question always comes, you know, how much does genetics in itself play a role? I mean, and and each one's a little bit differently in regard to you just mentioned, you have all these different people struggling with, you know, they get diagnosed and they didn't have any kind of genetic predisposition and still they got cancer.

So what is kind of your from all your reading. Know what what would be kind of a a good number to throw out there that maybe genetics play a role in, in regards to cancer.

Well, the numbers right now are that approximately a little more than 85% of I'll just stick with breast cancer, a little more than 85% of breast cancer, patients or women living with breast cancer have zero hereditary genes.

So that is by far and away the vast majority, of cancer patients. I mean, that that that's huge. So, yeah. So that's 85 more than 85% will have they can take all these panels.

They can take some of the risk panels that would indicate whether or not it's going to come back or not. Those are like I'm not talking about the tumor specific panels.

but but all of the other ones that are currently being offered and developed and researched, and they're going to come up with zero zero hereditary genes, because so much of what we're facing right now is environmental. And it's really interesting.

I don't want to I don't want to you stop me. I don't want to get really into the weeds, but literally, I think a month ago there was, a paper published in nature by a group of Harvard researchers that have actually looked at, estrogen and how it is impact.

They took almost 800 gene panels from different people. And instead of looking at cancer genes, they actually looked at estrogen metabolism genes or, you know, estrogen impacted genes.

And what they found is that estrogen is not just, it's a cofactor in about I think it was a little over a third of, of this 800 where they could actually see, the, the DNA damage from, caused in, in, in the estrogen affected genes.

I'm trying to simplify. This is a very complicated article, but but it's it's it's a super important topic. And I talk about it because of all the things that are really important for people living with cancer to understand this is really the only one where you have a lot of drugs where you can be offered.

Right? So, you know, women are talking about birth control pills and fertility treatments and hormone replacement or bioidentical hormone replacement or natural supplements or hormone balancing.

And it's it's and, you know, that's a topic that continues to be of interest to women living with cancer. Not everyone is just banned completely from, offerings of hormones.

Estrogen metabolism genes and actionable testing

And and in terms of quality life, it's really important to look at, I know of no other factor where you're just offered this much excess environmental toxins may metabolize to estrogen.

And I'm oversimplifying, but, you know, it's it's it's just a, question of total load. And so for women out there. So, I mean, obviously estrogen is important right now.

We we have it it does have a function in the body. Yeah. So what are the some of the things, I mean, is there such a thing as an estrogen deficiency in an individual.

well you couldn't you couldn't quantify that. Right. Because it until you're into full, full menopause. So way past, you know, blood levels, way past, you know what it's called? Menopause.

Your as your dial levels are changing literally by the minute. so and that's, that's one of the reasons why it's so difficult to measure, so difficult to research because most of the studies are point in time, and, and until, until you're way past, like, you know, what I would call real menopause or post menopause or or we don't even have a term for it.

you know, it's in fluctuation all the time. deficiency for a breast cancer patient. I think that's the objective. Okay. And that's the objective. I mean, like, for example, mine isn't even measurable and hasn't been for many years.

And are there different types of estrogen meaning one being worse and the other that you you want to you want to really make sure that you don't have a high level of this.

But this this type of estrogen over here may be, you know, okay, if it's a little bit elevated, it's is there such a thing or they're all the same that you want to kind of keep them down?

no, I mean, estrogen is a group, right? We're not even I mean, we're really when we say estrogen, we're really talking about estradiol. there are there are several estrogens falling into this group.

Not to mention, I'm not even going to talk about testosterone or progesterone or, progesterone, which I can't even pronounce. but what we can talk about our metabolites so we can talk about, estradiol metabolites.

And I even have a little chart to show you. I would love that. That'd be great. Yeah, because I think it's so important for people to understand, you know what?

What estrogen is, you know, one. And then also talking about the metabolite, it's you know, what metabolites are there and how do they impact us. And then you mentioned, you know, that the study, you know, where they was that 80,000 people that that they.

That, recent Harvard study. Yeah, yeah, that was 800. 800. I'm sorry. But there that's 800 of the entire genome. Okay. That's like a huge research project. That's.

Yeah. Right. So, to understand that, you know, over and above, just like the genes there, your own genetics, and that could be due to lifestyle, epigenetics, all these different things, how they are behaving.

And that can then impact how estrogen is as, driving a process like cancer. Right. So the gene so, so, you know, just to get back to your point about, can we have an estrogen deficiency or what's really going on because it's so hard to measure, what the reason I got stuck in looking at genes is because the genes are there and they're not going to change, and they're not impacted by what phase in the reproductive cycle you are.

So your genes are your genes. In this case, they could be more damaged over your life. But it doesn't matter if you're in menopause or a breast cancer patient or taking fertility treatments.

These are the genes and this is how they function. Technically, they're called modifiable. Well, not technically, but we're looking at modifiable genes, meaning these are genes that you can do something about.

It's clinically actionable. So, let's look at some of them. I would love to I would love to because they are normal Joe or normal Jane, I should say in this, this, scenario, it seems overwhelming and complicated, but, there are certain things I know that it's important to look at, and I would love for you to kind of.

And I break down and to make it a little bit simpler for people to understand, so that they know where to go, to look at the real risks in regard to how they process estrogen.

Sure. let me share my screen. and let's just look at if you have these panels, for example, this is an old study, women who have, more than three mutations, women who have more than three mutations and have breast cancer, and women who don't have any of them.

So I like this chart because it clearly demonstrates that, what I don't ever want to do is create a lot of fear so you can have mutations on every single one.

the genes we're going to talk about, which are metabolism genes, they're phase one and phase two detoxification metabolism genes, they're they're processing all kinds of things besides estrogen.

But I'm just talking about estrogen. So the blue is women who have more than three mutations. this is a restricted thing. I think they were only looking at six genes here.

and they are they don't have breast cancer, but they are the ones that need to be a little bit more careful.

Phase one and phase two detox support

The woman in, purple, which is basically an identical mutation arrangement, have breast cancer in the women in green don't. So you can see just, you know, in this graph how important, estrogen is to the women with cancer scenario.

And like you mentioned that these are even though you have these dysfunctions and, you know, your genetics, there are actionable genes, you know, but it is important that to understand your weakness, you know, your genetic weakness.

So you know what action to take. Well, exactly. Because the objective here shall I shall I move on? Yes, please. the objective here. What what are we talking about?

We're talking about how effectively you're excreting these. Right. So mostly we're talking about urine and sweat. We could be talking a little bit about feces, but mostly we're talking about how well are you getting rid of this.

Right. So whether or not you're taking any extra estrogens, I'm talking about women at high risk. You know, if if you are about to embark on hormone replacement therapy and you know that you have mutations and every single one of these, then you need to be monitored a lot more closely.

I don't think it means you're not taking anything, but it means you need to be monitored more closely. It means you need to consider alternatives. so so we're looking at phase one genes and we're looking at phase two genes.

and you can correct by the way, or you can improve or smooth out basically the way that these genes are functioning. So if you take a test, if you take a test, an estrogen metabolism gene test, whether it's ordered by your doctor, or it is something so it's something that we're doing to to help women be able to do this themselves.

Looking at information on genes, you're looking at what can you do? So if you have mutations in the sippy family, which is phase one, you can take a substance called dim pro or indole three carbonyl calcium decluttered, to help you excrete any excess anything that's imbalance more effectively if you have mutations in the second family.

Let's for sake of the argument, let's just call it GST soup family. Then you can use a strong antioxidant, and you can really pay more attention to the environmental toxins.

So I know a lot of women who have, breast cancer, they're living with breast cancer, and they're scared. They're scared of they're scared of their food.

They're scared of their water. They're scared of their their laundry detergent. And they don't know what to do. But, you know, it's it's a pro. We basically offer a program like how to learn about that, how how to pick your cosmetics better, how to pick your laundry detergent better.

are you eating three helpings of cruciferous, or mustard family vegetables, kale and broccoli and brussel sprouts, every day. And and then the rest of it is of went.

So, so I think it's really complicated to start out. It's overwhelming. But the program itself is not. I love that and I yeah of course here it's very it looks very simple because when you get one of those genetic panels, I mean it's just a bunch of letters and, you know, there's so many possibilities and it becomes overwhelming.

But here looks like I, it looks like for group, some of you have the two main groups, the, the the CIP one and the gassed group and the SIP. You know it just to cross that first, like a dim or a dim pro or you know, something like that.

And what is dim camp? Can you explain that a little bit. Because that's, that's a supplement that comes up a lot for, you know, people battling breast cancer.

So dim I'm not going to pronounce it because I can't, die at the on that thing. it's a, it's an abbreviation for chemical. It's basically which I'm going to help a lot here.

It's the active ingredient, in in the mustard family or cruciferous vegetable. The family. So broccoli kale brussel sprouts, radishes. There's there's turnips.

There's a whole bunch of vegetables where basically that is the active ingredient. And that's often why you're told that to be having that, that's, that's the metabolic or the chemically active ingredient in those vegetables, which will help you excrete, in this case, estrogen more effectively.

And so that that's all it is. Yeah. Yeah. And one of the challenges says, let's say you have a snip and you know, your your, phase one detox pathway is working great, but phase two is not working great.

And you, you will then find that out, you know, genetically, you know, by that GSD group that is not where they need to be. then it's important then to make sure like you have that list of different antioxidants and different foods, you know, to really support because you want to have that completion of both phase one and phase two detoxification.

So it doesn't kind of get stuck in that limbo land, because sometimes that can even make it worse. Exactly. You I mean, the the whole point is that you don't want any of these toxins.

In this particular case, we're talking about estrogen recirculating in your bloodstream. You want to get it out of your body in a healthy manner. That's that's everything that we're trying to do here.

Estrogen metabolite pathways and recurrence risk

So, you know, when I give talks, basically what I say is, you know, ultimately for this particular issue, all we're talking about is either dim or and all three carbon, all are calcium.

Declutter. Right. If you have mutations in that family, and cleaning up your products and your usage and your exposure to pesticides and other chemicals, like for example, just a bit of personal trivia I had or have a Dunkin Donuts addiction.

So, I found myself, you know, ordering tea. You know, I drive a lot and whatever. And so I'd be going through drive thrus and getting tea, and I don't even like it.

I just like the cold, and it's convenient. and, you know, where else am I going to get a quick drink? And, you know, basically, what am I doing? I'm drinking plastic.

I'm not even going to talk about the quality of the tea. you know, the issue is the issue is I just picked, you know, I just drank plastic. and so I stopped, I stopped, and I went back to my, stainless steel cups.

But, you know, I mean, it pains me. It pains me every time I have to drive through one, and I'm on a long drive, and I don't get my little iced tea, but, you know, those are the kinds of choices that you need to make as a person living with cancer, right?

Do you want to drink plastic? And ultimately, I mean, there's a lot of other issues with the plastic one of them is that, you know, it may be metabolizing into something an estrogen like chemical.

And that's just one small example. Yeah. Yeah. Talked a little bit about that, you know, because you have, you know, our normal hormones, you know, that that we produce ourselves.

I'm going to stop the screen share. Right. let let me let's do the, the metabolite pathways. I'd like to I love to the one above the right there. Yeah. Yes.

Because I love for people to see. We're talking about the the family of the metabolites of estrogen. if you don't mind going through you, have you, like, 16 a four?

Oh h 2OH can can you what what is the difference between those? Because a lot of people, they get like a test and then they see, you know, this is high.

This is low. and what what does that mean? That's one put you more at risk of something in one less at risk. Well, let's just let's let me try and simplify this as much as possible.

So so let's start with estradiol which is the strongest one of the estrogens. Right. It's actually it's the E two. and let's just talk about these two arms.

So one arm, the the arm e two binding to estrogen receptor. This is why women living with breast cancer are taking tamoxifen, or an aromatase inhibitor to block this arm, to block this part of the estradiol from B, from causing basically genetic damage and allowing the cancer to proliferate.

So that is the arm where where you know, all of the improvements basically in breast cancer mortality have come from that arm. The other arm is is what we're talking about.

We're talking about what's left over, which isn't addressed by by estrogen receptor blocking blockers. And for simplicity's sake, what we want is we want to push, we want to push any extra estrogen which is rolling around in our body and potentially becoming toxic, to be excreted, like, for simplicity's sake, in our urine.

And so we want we want to promote the the to OHC pathway. And we want to try and modify, modulate or change or improve how how our body functions with the 16 and the four and hence the recommendation of the Dem or the three carbonyl or the calcium declutter or the, anti oxygen, antioxidants, to try and push anything that is potentially toxic to the two pathway.

I hope that was simple enough. Yeah. So, so the calcium look great and dem and all those different supplements and the cruciferous vegetables then help to to move these, estrogen, you know, metabolites towards the, the two versus the four and 16 that can, like you're saying here, mutagenic DNA, increased cell proliferation, but with two, it says stable DNA adduct.

So we like stable. Yes, we like stable. We like stable. So, so for example, and I just want to point this out is that, both arms are really important.

You know, if you look at mortality from breast cancer and any improvements that have happened over the past few decades, they're due to the blocking of the estrogen receptor.

And so so if we add that because, you know, if you if you look at, you know, garden variety breast cancer, which is the primary 85% of it, whatever stage you're at, that's the piece that's missing.

I mean, if you if you simplify the numbers, most women with, you know, anywhere from 0 to 2 to a two, I mean, sorry to be stage cancers. are going to be left with approximately 20 to 30% risk of recurrence over their lifetime, which is not in substantial.

And that's including the ones taking the, the estrogen receptor blockers. So, so in my mind, it's really imperative. I mean, that's not the only reason for a recurrence, but I think it's very helpful to, to try and improve your estrogen metabolism because you can because you're able to.

It's not a hereditary gene. It's not nothing that you can do about. It's not a surgical intervention. It's not requiring chemo. All of those are critical.

But this is something that people can do to lower, potentially lower their recurrence risk over time. After traditional treatment, when everyone's worried, everyone's worried about what can they do?

Or are they doing it right? It's also measurable, right? Because if someone has enough money and resources and the right kind of physician, you know, you can monitor whether or not you're doing it correctly through these panels.

The 16, the four in the two. Yeah. And this. Is great because you can actually know if everything I'm doing is working. Which is fantastic. And, and and this is so important, I think for people to understand and whatever group they're in, you know, let's say they're dealing with breast cancer.

They're taking a hormone blocker and or a estrogen blocker. But recognizing that that is not by doing that, they haven't done everything they can do. You know, they they still is still be beneficial to understand.

How do I metabolite estrogen. How much effort do I need to put into it. And then also what tools to use. And then also recognizing you talked about plastic cup.

You know so you have the category of like xeno estrogens.

Reducing xenoestrogens and everyday exposures

You know things that function like and that are estrogen like that we were exposed to. And then how to identify what that is and how to reduce that in our environment.

Yes. I mean, you know, you know, what I'm trying to do, what we try and do at the foundation is, is help women do the best they can with the current circumstances and, and become fearless.

Meaning, meaning, you know, that you've done you're doing everything that you possibly can within our modern world. It's really difficult. So, for example, I went on a quest a few months ago to see if I could eat without plastic, and I gave up.

I gave up because, for example, one of my physicians and I were like, okay, well, you just go to the butcher, don't buy meat wrapped in plastic. Well, the butcher, the butcher provides me.

Now it's really not paper anymore. It's coated. It's coated paper. They don't. No one uses paper anymore. No one uses just plain, untreated paper for berries or meat.

Or like in the old days, or eggs. Every single thing has got some form of chemical coating. and so I actually paid attention to this for a few months, a few months ago.

and it's extremely difficult. It's really difficult. So, you know, then you really have to concentrate in my mind doing everything else I can correctly.

Am I giving myself the best shot I have of living in modern day America, as it is right now, to try and avoid this? I know estrogens. I mean just when you're handed a is a receipt, you know, at the grocery store and you grab that receipt, you know, the coating, the metals, you know, everything that's on that receipt you're going to be impacted by.

Or, you know, if you have cleaning agent at the grocery store, you know, that that's going to you're going to be impacted by that. So yeah. And you're absolutely right.

And modern day, you know, whatever country you're in, it's almost an impossibility to stay away from zero estrogen. So then you need to know, you know, the you need to support your ability to clear that out because you're there.

It's everywhere. Exactly, exactly. And I and I, I mean, I can't overstate how happy I am that this Harvard group just came out with this paper where they're studying it because I think it's a great, a great pathway in the research for them, actually, to, to institutionalize the kinds of things that we're talking about.

So you're, you're at is there? Yes. I mean, because you do a lot of education in this and you, you know, so how can people kind of learn more of what you do and how to empower themselves, you know, through this journey?

So for so I am the founder of the Better Estrogen Health Foundation. And what we do, what we've just recently launched is we're raising money to provide what I'm about to talk about, for free for women living with estrogen cancers or those at high risk, meaning they have people running in their family.

so if you go to my website, I, we have a do it yourself informational program in it. And and it's hard, right? it requires a lot of energy. But I think for anyone living with cancer or having the fear of of it coming to you because you've got a bunch of people in your family, all of who have no hereditary cancer genes.

you know, it's really worth the time. So, so what we're doing is we're using informational DNA kits in such as, ancestry, DNA or my heritage. You could do it with 23 and me, but since they had the big hack, they don't allow the downloads of your raw data anymore.

So you need your raw data. You need your raw data. You buy the test kit, and then you go to Genetic Life Hacks, which is, a service, a subscription service that this phenomenal researcher, is doing.

And her work is complicated. Your average person isn't going to be able to understand it, but you upload your genes in there and there's a variety of topics, including estrogen metabolism.

You look at the report and you go, oh, do I have mutations in the SciPy family? or do I not? Do I have mutations in the second family, which is the first family?

and then we have a recommend date. We actually have a program with a few nutritionists where where you can have a 15, 20 minute consult just to review this, this report.

and so we've put the whole package together where someone can look at this themselves for about $300, which is, which is, you know, it's still $300, but you can actually explore a lot of other health issues, which many people who are living with cancer or, Genetic Life hacks is giving a one month subscription.

and, and, real subscription to Genetic Life Hacks is not that much. Anyway. I think it's $9 a month. So if you want to explore some of the other issues, because a lot of people have gone through surgery and chemo and many years on on estrogen blockers are facing other issues and they can see, you know, what, where is this and what can I do?

What can I do about it? There's nothing in there that's not actionable. Which I at the end of the day, that is kind of the the empowering aspect is that knowledge allows you to, create an action that can change the outcome.

Foundation resources and personal cancer story

And obviously in your world, you know, what? What you battled. And that has become very important. Yeah. So do you mind just kind of sharing a little.

You alluded to it a little bit earlier, but do you mind sharing why this is so important for you? well, I was diagnosed with a estrogen receptor positive progesterone receptor positive cancer about 14 years ago.

Now it's around my 14 year anniversary and my cancer came out of the blue. My parents were actually diagnosed several years after me with estrogen, sensitive cancers.

But I was the first person in my long, long researched family to come up with this. And I, I had like no idea whatsoever where the cancer came from. And so I sought out help, and I wound up meeting, a biochemist who here who was doing actually research with the merchant Marines on this topic.

and, and we went through my estrogen history. Turns out, my entire family was loaded with estrogen metabolism

dysfunction, like endometriosis and fiber tumors and polycystic ovarian syndrome.

even severe acne. turned out my entire family had this dysfunction. Nobody actually had cancer. Which goes back to my point. Like you can have this and if you're total load is not, in excess, you know, you might have other problems, but this is not a death sentence.

I think, you know, sometimes people look at this and they go, oh my God, I'm going to wind up with cancer. And that's not the message here. The message is just be more careful and cognizant of what's going on.

And so in my case, I had had, a ton more, estrogen related exposure from medications and chemical exposure, which, you know, I figured led to my breast cancer, at least.

You know, in terms of the current research, I can see no other explanation. And it's the same for my parents. So I became and I really learned that nobody was talking about this.

And given how women are facing choices, from birth control pills to hormone replacement and fertility treatments and everything we're surrounded with, I just started to, advocate that everyone ought to know this.

So that's that's how I started. That's how I got involved. And I consider myself really lucky. I consider my my obsession, so to speak, with this, to really be helping with my recurrence, because my recurrence of the odds are we're never great.

and so so here I am 14 years later. And I love it, I love it, also, you mentioned, like, birth control pills. so you have obviously young women that are, maybe dealing with, you know, PMS or end of meet process or, and their doctor just cannot throw them on birth control pills or somebody that is wanting to prevent getting pregnant.

And they just do birth control pills. should someone like that prior to getting on birth control pills, check their genetics to see how they metabolite, you know, whatever medications they're given.

So, birth control pills are actually much, much, much weaker than they used to be. So people my age, I'm in I'm almost 60. And, any woman, my age who took birth control pills a long time ago, was exposed to much higher doses, much higher doses.

And so, so the dosage, estradiol in current birth control pills is much, much lower. So I don't think that it's as critical a factor that the issue is, that there's no data.

Right? I mean, my problem with, with birth control pills and really young women is that we don't really have data on the long term consequences of someone who's not fully grown.

you know, my issue with birth control pills is, is actually not related to estrogen metabolism dysfunction, but more like what happens when you put a ten year old on birth control pills.

And I just think we need we need more data. The but not getting pregnant is a good reason to be taking birth control pills, right? there's a lot of risks to becoming pregnant. So.

So I try and avoid the, the current. But I think, you know, for a woman about to put her daughter on birth control pills like a very young daughter, then I think it's really important, right?

Because sometimes when I give presentations, it's like, well, if you were watching your ten, 11, 12 year old try and get through middle school and they have really bad symptoms or, or or it's really impeding their life, you know, can you, can you load them up with painkillers, can you load them up with Advil for that week or that five days?

Do they really have to go on birth control pills? But those are really tough decisions. I think that a mother making those or parents making those decisions for their young children, this will help, this will help.

And it also may be one of the reasons why the young girl is even dealing with that. Yeah, exactly how they how they process or hormones and detoxify the estrogen.

Birth control, young women, and prevention

Yeah. May be a big reason why they're having issues to start with and why something may be starting earlier. So then to kind of look at that and and maybe maximize that in the child can be a good start.

Well, you know, this is this is a whole nother interview topic. I think we're staying on cancer. But, you know, endocrine disruption is the probable explanation for girls, girls starting their periods earlier in general as a society and for sperm count disruption in men.

So so that's a whole nother topic. But but I think yes. I mean if you're I mean generally, if you're a mother making a decision for your daughter, then then I think this is helpful.

It's helpful information. You know, the, the reason why I also feel passionately about the topic is about the genetics is like, for example, let's take pro sometimes it's recommended for cancer patients without testing.

And you know, I consider these some, you know, nutritional supplements to be like, an alternative medication. In fact, some of them in Europe are actually regulated.

Dim pro is regulated in Europe. in the same vein as, as a pharmaceutical. So I think before you embark on taking any medication for the long term, you should try and look at your genetics.

I agree, I agree, and, and, and I, and I apologize for taking it down another rabbit hole. Oh, no. I'm happy. I'm I'm happy to talk about that for another hour.

Exactly that. That's what it would be at least. Yes. Well, TJ, thank you so much for everything you're doing this. This is thank you. Yeah. And thank you.

And it's so so important for women I mean it's not only women because men are dealing with their issues as well, but to really understand your genetics and then understand that you have actionable steps that you can take based upon what shows and by do make taking those actionable steps.

Then you can then reduce risks and that you can empower yourself and putting yourself at a better place. So you are somebody that's driving that message strongly forward.

And I appreciate that. Well, I'm a big fan of yours and an honor to be here. And I thank you very, very much for your time. Thank you.