Introduction to Epigenetics and Genetic Risk

You're in control. So you said it's a really positive word. It really puts the power back in your hand. And to again finish out that story that I was telling you for that particular gene, I do have an increased risk for Alzheimer's.

There are actually studies looking into your genetic variants and looking at how far to which extent you can actually have control for that. So there are modalities where I can actually lessen my risk for all simmers through epigenetic modifications.

Estrogen therapy for example, for women is a really good one for Alzheimer's. Welcome to Doctor Talks, the podcast where every episode leads to a healthier you.

Join us as we navigate the world of optimal health, uncovering groundbreaking strategies to conquer chronic disease. In each episode, we'll bring you the latest insights from leading health experts, medical innovators, and wellness warriors.

If you're seeking to transform your health journey, or if you're looking for answers to burning questions. You've come to the right place. Get ready to unlock the secrets of lifelong health and vitality.

This is doctor talk, real talk from real doctors on the issues that matter to you most. Hello everyone. Welcome back to the Integrative Health Podcast with Doctor Jen.

Today we're going to be talking to Hannah Wendt, Hannah Wendt has a lifelong passion for longevity and breakthrough, disruptive technologies that drive radical improvement to the human condition.

She attended the University of Kentucky and graduated with a degree in biology. During that time, she had multiple research internships studying cell signaling and cell biology.

After graduation, she worked for the International Peptide Society as their director of researching content. Through work in integrative medicine industry, Hannah saw an opportunity for methylation based age diagnostics and started Tru diagnostics in 2020.

Tru diagnostic is a company focusing on methylation array based diagnostic for life extension and prevention health care serving functional medicine practitioners.

So we are so excited. We're going to geek out today on aging and longevity. So welcome Hannah. So happy to have you here. Thanks, doctor. Jen, I'm excited to chat with you today.

It'll be a fun one. Yes. Well, so you're studying in undergrad and then you go on to do all these research internships. What sparked your passion? Because research can be kind of boring.

So how did you what did you get excited about here? Yeah, you're right, it can be boring. And I found that out. I think that the hard way the bench work was definitely not for me.

Hence, you know why I'm at where I am now, essentially. But yeah, you know, my passion really sparked when I realized I wanted to still be in the scientific field in realm.

Like, I love discovery, I love finding out more questions than answers, but I also want to help people I know bench work can be super isolating. You can be by yourself a lot of times and really focus on one project that can take years, to maybe have some type of breakthrough.

Right? You're you're focused on on that maybe, and that actually led me down a couple other opportunities as it related to genetic counseling. So genetic counseling seemed like the perfect fit for me because, you could still be heavily involved in clinical research trials, but with human patients and real data.

And then you're counseling your patients as well through their genetic information. So actually, I wanted to become a genetic counselor. Did it end up getting into genetic counseling school the first time around?

So I took a unique position at a peptide, pharmacy, in Kentucky. So they were the fourth fastest growing healthcare company in the nation in 2019. And that was super, super fun.

But I fit in there really well because the issue there was, they didn't have a lot of research on these peptides. And that's kind of where the idea of true diagnostics in this age testing was really boring to say, well, how are these peptide therapeutics affecting our number one risk factor for all cause mortality and morbidity?

Yes, I love that. And you were actually working with people and seeing changes where like you were saying, when you're just in boring research, it's not as good.

And the cool thing about this methylation testing that we're going to dive into is that you can make changes for it. And with like you were talking about being a genetic counselor, a lot of those things you can't really change.

So like cystic fibrosis or one of these rare genetic conditions where you usually go to a genetic counselor, this we're talking about are more things that you can change.

In the epigenetics field. So you're so right. Yeah. So let's talk about what what is epigenetics. Some people might have never heard of that term. And like why is it such a good term?

Hannah Wendt's Path to TruDiagnostic

I think it's a good term thinking I love it. I think it's a fun word. It's obviously like a spin on genetics is how people interpret it if they haven't heard it before.

So let's break it down into its syllables. And what it actually means is a word. Epi is just a Greek prefix. It actually means above or on top of. So we're quite literally saying we're looking above or on top of the genome.

And you already alluded to this doctor Jen, but your genetics, right. It's not changeable. You test once you find out your historical familial predispositions and you have this genetic risk of said disease, that's not going to change.

So I'll give you a story. For example, I've tested my genetics. I know I'm an ApoE three four variant, so I have increased risk for Alzheimer's. My grandmother had it, I can I not only have an increased risk in that particular disease, but an increased risk to also have it at a younger age.

However, from an epigenetic standpoint, like you mentioned, these markers are changeable. It's that real nurture rather than that nature part that alludes to genetics.

So it's how you interact with your environment, your behavior. Did you wake up this morning? Did you work out, do breathwork, journal, have a nice protein rich breakfast, or did you not do any of those things and drive straight to Starbucks and get that big venti sugary drink out of a plastic cup?

Right. So I'm giving you extreme examples here. All that to be said, though, your epigenetics can be changeable. You're in control. So you said it's a really positive word.

It really puts the power back in your hand. And to again finish out that story that I was telling you for that particular gene, I do have an increased risk for Alzheimer's.

There are actually studies looking into your genetic variants and looking at how far or to which extent you can

actually have control for that. So there are modalities where I can actually lessen my risk for Alzheimer's through epigenetic modifications.

Estrogen therapy, for example, for women is a really good one for Alzheimer's. Yeah, I love that. And a lot of people, they look at their parents and they're like, oh, they had dementia, or they had a heart attack.

And I'm just it's it's my genetics. And yes, genetics play a role, but they're not everything. You can make these changes. So how how do people test for these things.

Because this is not something that you're just going to go to your doctor and be like, hey, I want to look into my epigenetics. And, you know, I want to look at my methylation age.

You know, they would look at you like you were crazy, right? They they would I actually that would be super, super funny. I challenge anyone listening.

If you still go to a GP. Yeah, I see Anna. This is a funny story. You'll appreciate this. So I got fired from my primary care doctor because they ask for a fasting insulin, which is, like pretty basic, but but hey, you know, I told you that I live in northwest Ohio, and it's it's rough.

It's rough here. But it's funny because my husband still beat the guy, and I'm like, he's fired me. Like, I got a letter from the office anyway, so if I went in, ask them about this.

Because here's the thing. You guys like some doctors just they're they stopped learning after medical school or they're burnout, or they're in this insurance model and they they don't have time to educate themselves on testing like true diagnostic and other things out there.

So it's not really their fault. Like I have a different model of how I practice. So I allow myself time to study and keep up with things like this technology.

So anyway, she's I just thought you think that was funny? I, I mean, I did yes, it is funny, but it just like how broken is the system and yes, I'm from Ohio as well.

So I totally, totally understand. Yes. West. Yeah. Yeah. And I think your question is, is great. Like, how do you actually test that. Seems like the the next, you know, logical question.

And this can become a little bit difficult to really almost wrap your mind around. There's different epigenetic modifications. Right. You have DNA methylation.

You have histone modification. You have a state relation. There are all these types we can actually modify our genetic code through now at Tree Diagnostic we measured DNA methylation.

When people hear that they usually think of the MTA GFR genetic cycle, you know, variant. And that is a very, very important variant. But it is actually just one out of the 50 million methylation cycles we have in our body.

What Epigenetics Means and Why It Matters

So when I say at true diagnostic, we measure DNA methylation, epigenetic modifications. We're really just looking at a super tiny molecule. It's a C-H three group A carbon and three hydrogens.

And if that group is present, it actually binds to the promoter region of the gene and shuts off gene transcription. So you're not getting that expression.

And if that molecules are removed, you get the green light per se. And you're you go through genetic transcription all the way out through your central dogma to that phenotypic expression level.

So it's this balance of how our genes are being expressed, and it's not necessarily good or bad. I always like to say, hey, we want to shift your DNA methylation markers in your favor.

You know, a good example is you want your cancer genes to be methylated and shut off, but you want your tumor suppressor genes that are going to stop that cancer to be on methylated and turned on.

So it's this really fine tuned balance, which I think, makes it really fun to test because again, it's it's changeable. You can start to retest over time.

Yeah. Now when someone is looking at this with the methylation, they, they can see a change within a year or six months. Right. How often do these methods, these methylation how how often do they change.

You know what. Usually about 3 to 6 months. You say retest or that's usually how long it takes to move like the epigenetic part. Correct? Yeah. Yeah, that's that's a great question.

So it depends really on you as a unique individual and your needs, what you're looking to get out of the testing. As a good rule of thumb, if you're someone who you know you have things to work on, you're probably not the healthiest version of yourself.

And you really, really want to focus on increasing lifespan. Health span. I probably recommend testing a little bit more frequently, like even every 3 to 4 months, you can start to see changes.

We've done several studies, even with just simple dietary changes, where you can start to see, movement in as little as eight weeks, which is great. Once you start to understand your body from that type of level, you can start to stretch out the testing a bit more.

Maybe you do it every six months for a couple years and then do it once a year at least, I think for maintenance, because what you don't want to happen is you don't want to test too far apart and then see longitudinal changes and whatnot.

Remember what you did not remember what you didn't do and start to question, like, wait, what? Why am I seeing these changes? What happened again? So as long as you're just following up your journaling correctly, or you're at least remembering what you're measuring, I think it's safe to say you can do it.

To your best ability. And when you really want to start to, to measure, to see changes, to put in the work. Yeah, absolutely. We hear a lot about telomere length. Right.

That used to be I mean I think of telomere length now is more of like an older school way of testing our, our aging, our actual biological age. Can you dive in a little bit about telomere?

Yeah. Testing. Yeah. Let's let's nerd out here and go deep. So, even broader speaking, right? Just like biological age testing, that's how most people know epigenetics and telomeres.

You can really measure biological age in any way, right? Like grip strength, gait speed. You can create a formula and say, you know, depending on how fast you run from point A to point B, I'm going to calculate your biological age.

Obviously there's different criteria you want to have. You want to ask yourselves questions like how predictive of different outcomes is it? Is it accurate, precise, reliable?

Does it move in the correct direction with things we know improve lifespan like different, methodologies such as caloric restriction or certain molecules?

Does it tell you how or why you're aging? Those are just a couple things we ask ourselves internally here at True Diagnostic to like validate if these clocks are legitimate or not.

So all of that to say telomeres, right. Popped up, a while back. They were the gold standard, as you mentioned. Doctor Jen. And they are still used today.

We actually can report them out through the DNA methylation, through epigenetics. But we are starting to realize they fell short in one really crucial category, which was they're not super predictive of outcomes.

Right. So you can have short telomeres and you can still live longer and you can still actually not contract any disease states. So the there's not very strong data there.

There's not very strong correlation. So it just started to become a weaker biological age in a sense. Right. It doesn't mean they're not important. I think, you know, as as we all know, they're still one of the many hallmarks of aging.

They still can give us a picture or a sliver into maybe our aging. For example, if you have shorter telomeres, you may have more senescent cells due to inflammation, due to oxidative stress.

If people have like critically short telomeres, they may have a variation, which is a, you know, genetic variation, that they can actually start to do gene therapy for or start to pay a little bit more attention to, because that actually drives more disease risk.

And, you know, earlier mortality. So to, to round out my answer here, they're not as telomeres are not as good as a predictor for biological age as they once were or even better, we just have better tools.

Right. Like the epigenetic clocks. What epigenetic clocks are out there currently that people can look into. Yeah. Yeah I'll name four of them. True diagnostic offers.

Three out of the four. There is one called Omic image. We created this with Harvard. This actually looks at clinical lab values, metabolites in proteins through your DNA methylation markers.

It's really, really great at predicting overall mortality. So there's there's that one. The second one we just started offering at the end of the summer is called Symphony Age.

We created this one with Yale. It's actually the aging of 11 different organ systems. It's really cool. It's it's so cool. Yeah. So when you're done, I have some stories about the symphony.

So. Good. Good. Yeah. So it's the age of your your liver, your heart, your lungs, your brain, your immune system, musculoskeletal, metabolic. It's a really, really nice clock.

There's there's 11 of them essentially we have Deneen and Pace, which is the famous clock that measures more of a pace of aging instead of just a biological age.

DNA Methylation and Biological Age Testing

That was created with Duke and Columbia University. And those three again are offered through true diagnostic again age symphony age Canadian pace. There's a fourth one that's really, really good.

It's called grim Age. That one is by Doctor Steve Horvath. They actually did a version two or like an upgraded iteration of it called Grim Age. And, grim Age performs really, really well in terms of, again, like predicting disease, state and death.

It's reliable. It moves in the right direction. With different therapies too. So I always want to throw that one in there as well. Yeah. That's awesome.

And yeah, I like those in my score, you know. And I say when someone when they're methylation and epigenetics is I hold that higher than the telomeres.

You know personally when I'm talking with patients with a report. But really interesting because I'm doing this by a regulator program and I'm just seeing, their, their diagnostic tests and then a little bit of their history.

And then I do the consult with them. And this one that surprised me because she on her symphony test, her hormones were flagged as premature aging because it's really nice.

You get this print out and you have your chronological age and then your organs. It shows if they're aging faster or slower. So it's really cool how it breaks it down.

And she said she was on hormones and I was like, oh, that's so weird because they're symphony. Her hormones were off. If she's on bioidentical hormones, I would think it would all be, you know, normalized or even younger.

Well, found out she was on oral estrogen, which is terrible. And, and I told her I'm like, well, you're not you're probably way overdosed on the oral estrogens because most women are post-menopausal.

So I'm like, you need to, you know, fix that a little bit. So it gave a really good clue that something was off and allowed me to dig in a little bit more.

Another symphony test. Someone was aged like ten years on their lungs, and I was looking through the report. And then when I spoke with, she had asthma her whole life.

Right. So it was aging because that you know, inflammation, aging and inflammation of aging was mainly in her lungs. And it brought down her overall age score.

So it was very interesting. It's really, really cool because you sometimes get reports on the symphony that are a little bit surprising. I don't know if you have noticed that too.

And you're like, oh, and but then it's good because you can pay attention to it or dig deeper and get lab work or other testing like gut testing and see why that is more aging faster, more inflamed.

Yeah, definitely. I love those stories. I get stories like that all the time that, I have two in particular, that just stick out. So we have a blood age and that's driven by a lot of, markers you get on a CBC, hematocrit, hemoglobin, red blood cell distribution with, etc..

And that is actually most predictive of leukemia. And actually the this person had an accelerated blood age and they have a family history, that has a really unique blood cancer.

I don't I don't know what it was called. I don't know what it was, but he was thinking, hey, that's what's driving this blood age, because there's still going to be some type of familiar, you know, hereditary based link.

So that made him be super proactive. He's getting labs. He's looking at, you know, the particular signature for that cancer. One call I actually just had this morning with a practitioner.

He had pretty good aging like his. All his scores looked really good. His overall symphony age was actually super young. So kind of like the composite score of all of the the individual systems except his lung age was like nine years older.

His and then so he was like, this is interesting. I asked, you know, did you have asthma or anything like that? He's like, no, I scroll down. I looked at his smoking outcome on the report because we even have an outcome on the report that can tell you basically, if you were a smoker, are you a nonsmoker, intermediate, or are you a current smoker?

And he actually was an intermediate smoker or came out like he had the signature of someone who had smoked previously? So I asked, all right, you know, just tell me straight up.

No worries. Are you a smoker? Were you in the past? And he goes, no. And I'm like, wow, this is really interesting. And I said, well, you know, was there any secondhand smoke?

And he again was like shaking his head. And then he was like, wait a second. Actually, my grandmother, when I had lived with her for a long period of time growing up, and my grandmother was just like a chain smoker back in the day.

And that's if I had to guess again, probably the signature that it's picking up. I mean, that's when everyone smoked indoors. You know, you had the yellow ceilings, right?

You can just like in it, oh smell it and feel it. And yeah, I mean that's, that's a signature that will stay with him for, you know, probably a while.

It'll get better and better as time goes on. But, you know, he was 40. Chronologically. Yeah. And his lung age was, like, 49. Wow. Yeah. See, that's why all the.

And I was thinking you were going to say, like from, like the fires, like the forest fires out west or something. Because I wonder what that impact that's having on lung.

Lung age. Yeah. Good air systems and yeah it's it's really it's it's really cool. I really like the symphony report and you know there gosh I have some patients that their brain age was just a couple years older.

But we're going to focus on that because they do have history of dementia in the family. So you need to, you know, optimize everything else and bring down inflammation.

The the other thing that's in that report that I think is cool is the, weight loss part. Could you explain that a little bit, the genetic weight. Yeah. Yeah, yeah.

So Doctor Jen is asking a question about kind of one of the additional outcomes we give on our report. So this all goes back to epigenetics just being such a cool biomarker.

Like we're able to start where we're starting. We're barely scratching the surface. We're starting to realize what epigenetics can tell us about our body.

So there's one gene we look at called Pon three. And the expression levels of this gene. We look at, I believe, 11 different epigenetic markers on this gene.

And we're really able to tell you if you're able to lose weight or not with caloric restriction. Right. So there's really three outcomes. You're either a non responder, an intermediate responder or a full responder.

And this goes back to the idea that some people use caloric restriction as a weight loss routine. It's not going to work for everyone right. It's not calories in versus calories out.

It's much more complicated than that. It's really how we're metabolize using those calories. And again, the result you get is not good or bad. It's just giving you more information on how you really want to deal with your body.

So, non responder meaning you would not lose weight with caloric restriction, intermediate. And it might work. You might need a little bit more push depending on again where your markers fall.

Telomeres vs Epigenetic Clocks

For responder ism means you absolutely would lose weight with caloric restriction. So we love caloric restriction for extending lifespan and healthspan it may not be right for you, it may be right for you.

This report could help guide that. I really like that one though. People are always super interested in it and asking

questions about it because, yeah, super powerful.

You know, the more knowledge you have. Yeah. And it puts some pressure off. Right. I think it's funny there. There's a cardiologist that I like argue with when I see him at conferences and I'm like, it's not calories in, calories out.

It's not like I know you're a man and you respond this way and maybe a few of your patients, but I will give you hundreds of other patients that do not respond to calories in, calories out.

And I'm sure if we tested all of them and looked at that gene, they would be intermediate or non-responders. So that takes pressure off people. But it's also frustrating because people are walking around thinking that they're going to restrict their calories and lose weight, and then they don't, and they get frustrated and they binge eat, right.

And then they gain more weight. And then, yeah, you know, it's it's kind of sad, but but yes, calories in, calories out maybe for some people. But your genetics probably say no.

Exactly. Yeah. And that's just the epigenetic, you know, outcome. There's I know there's even a couple genetic snips, single nucleotide polymorphisms that look at that like same exact pathway and whatever.

Whenever people who have like all the testing done, look at what we report out and what their genetics say. They're the same, right? They align. So you're able. Yeah.

To get that same window I mean it makes sense. The research looks really, really good. Yes. No that's that's really interesting. So when you look at all these different epigenetic tests that were we've been discussing, are these pretty accurate and health prediction I mean is this something that we, you know, it's worth getting, you know, is it really going to going to make a difference.

What like studies have you, have you guys had on this. Yeah. So again most people find epigenetics through biological aging right. Because that's where it became super famous, where it really got started.

The biological age clocks that we have, I'll pick on oh, make Em age in particular has a 92% accuracy rate. In terms of predicting death, just itself, which. Wow.

That's great. And a lot of people are super surprised by that. Actually, if you just use your chronological age, we can predict death with a 72% accuracy rate because, again, chronological age is still associated with death, right?

We're just getting better and better and better. So think of these as really unique biomarkers. Now that's just the aging kind of window. What we're really starting to create I don't I don't even think I've spoken about this on any podcast or publicly before. Two.

So first time what we're actually more excited about. Well, personally I am are these methylation risk scores were created. Oh, so this is basically using epigenetics DNA methylation to report out specific risk for cardiovascular disease, chronic kidney disease, chronic liver disease.

We even have one for depression, COPD. There's like 7 or 8 of them total. I think that was maybe 5 or 6 of them. Yeah. And these are going to be super accurate even more accurate than the traditional testing that's already out there.

And yeah, we're so excited about it. It's not a product. It's not available yet. It probably will be early next year. In 2025. We're actually taking these tests through FDA approval pathway.

They've gotten expedited. Expedited as well, just because of the importance. And I think what the regulars. Yeah, are starting to see. So we're so, so, so excited.

That's really cool. So just everyone listening out there. So you would get these risk scores and same with you get

your methylation and epigenetic aging clock all this stuff.

But these because it's epigenetics. It's not set in stone. These can change. And I think that's an important part that people need to realize. Right. Yeah.

Yeah. And again why epigenetics. And I just want to make that like so clear is for you know there's a couple reasons. Probably three I'll just try and sum them up.

It's a super easy collection method. It is just a blood spot card. You're not going in. You're not going to different labs getting your blood drawn after you received a referral from, you know, special and all of these different areas.

So it's a really easy collection method. Number two, the cost, you know, you can get everything the biological age, the risk markers, you know, upwards of 1600 plus biomarkers in just those couple drops of blood for a relatively cheap cost.

It'll start to go down again as the uptake in the test goes up, as even payers actually start to reimburse for this.

Organ Age Clocks and Personalized Insights

And then number three, alludes to what I just hinted at is the amount of data you can get is insane, right? Just with that one test. So again, ease of collection cost and the amount of data are really the three points for why epigenetics, that we keep coming back to and I think is really the story that we're, we're trying to tell.

So yeah, it's it's really exciting. Yeah. It is. And I, I joke now when I'm around people that are nerdy like me and they're like, what's your age? Like chronological or biological age?

What would you what would you like to know? Yeah. What what was the youngest that you've seen for, like, reduction of age for for people who. Yeah, this was like a big contest.

I know telomere length is more of a contest, right? But I don't like that markers much. But yeah, there are a couple a couple things I want to respond with.

We do. So number one, we have like a competition ourselves. We do the rejuvenation Olympics. Okay. That focuses on the pace of aging biomarker. And that's just because the pace biomarker pace of aging has been shown to change quicker or be like more responsive.

So, usually people test that one a lot more frequently and they focus on that because it's more of like a 3 to 6 month running average of what's currently happening.

Now the second thing I want to say is if you're talking like more broad scope like omega age symphony age you it's these things are hard to reverse right.

People think it's really easy. Obviously people who aren't as healthy if you're unhealthy, it's easier to change these because you have more room for improvement.

But there was a really good study that just came out of the book. Institute for aging. They're, you know, one of the top research institutions for aging in the world.

They looked at therapeutic plasma exchange, essentially 30 different epigenetic age clocks, and they saw a reversal of 2.61 years on average, this from one plasma exchange.

This was or weekly over, I think like an eight week course or something. So again, wow. Pretty intense therapy, 2.61 year reduction. I mean, you really, really have to put in work to start to see some of these reversals here.

Now, the good news, the last thing I'll say, my third part of my answer to this question is we are getting ready to

release a trial with Yale looking at 51 clinical trials from DNA methylation, epigenetic biological age clocks, and over 100 different epigenetic clocks applied to those data sets.

So this is such a such an exciting study because you're able to start to see, well, what interventions, what to give you the best bang for your buck, which clocks should I actually be looking at and using?

And again, they, they hint at the ones that I talked about the omega age. Tiffany PhD, you didn't pay scrimmaged to, and then again, simple lifestyle interventions can have a really, really major impact.

Secondly, you know, some pharmacological based interventions, with more of, like, the procedural based things to, we don't find, you know, supplements work as well unless you're, you're super nutrient deficient in a particular area.

Then it would probably change that the needle more. Right? You know, that makes a lot of sense. And this would be a positive reinforcement to someone, you know, especially with these studies coming out.

Look, they reverse their biological age by sleeping better or, you know, like you said, like earlier. Do you wake up and do breathwork and read and watch the sunrise, or do you go to Starbucks?

So yeah, it it does make a difference. These little, little things and testing it, you know, I mean, most patients that I've tested, you know, they've been under my care.

They're already in the health space. Right. So a lot of them are younger than their biological age and or their chronological age and their, rate pace of aging is is less than one.

But I've had a few that have been over. And I will say that stress was the number one thing that set them apart. And that's what I've heard with with same with these testing that you do that that stress will will take you back or not improve you.

Which is which is really frustrating. But it's really important to know. Yeah. Oh yeah. Yeah. And even those people who come out on top who are like already younger, my kind of, I guess rebuttal to that or whatnot is you're doing a great job, right.

Keep it up. This is something that's tangible, right? You can see like you're doing a good job. We want to keep it there. Right. And and again still encourage that retesting because it could fluctuate I mean things come up right.

Everyone's going through something. It's life. It's complicated. It's messy. It's beautiful all at the same time. But even, you know, to your point, the people who do have increases it.

They always have some type of stressor in common, whether it's from increase in inflammation from an outside stressor, right. Oxidative stress from an outside stressor.

And a little stress is good, right? Acute stress is okay. It's more of that chronic stress over time that really, really eats away at you. And there's a great paper on this out of, doctor, the Dean Gladys chef's lab out of Harvard, by Jesse Minnick called increases or biological, just increased upon stress and restored upon recovery.

So the title gives it away. But basically, there are major life stressors they look at, which was pregnancy, elected in and elected surgeries actually.

And severe, very severe cases of Covid 19. All of those are going to really increase biological age. I don't think that's surprising. What's surprising is your biological age goes back to baseline or even better after you recover.

So I think or misses exactly, exactly. And I think we don't give ourselves enough time to recover, whether it's from consistently working out, you know, whether it's from like I don't some type of trauma.

Right. Like a fight with your family or like a bad day at work or something like give yourself some space for that.

Right. Is my point. Well, well, pregnancy, I think that's a great one to bring up.

I mean, most women, they're going back to work after eight weeks. They're not just sitting there in that and letting their body recover. And yeah, I see it a lot.

I'm like, you need to just be with your kid and take time.

Weight Loss Response and Test Accuracy

And I know the more kids I had, the more I started going to part time in the year and part time and part time and working less and you just you need to give your body that time. And.

Yeah, like an illness, if you have a fever for a day, give yourself two days to recover from that. You know, you don't need to push, but it's hard because our society is just like push, push, push, get better, get better.

I know me personally. I want to get my, aged piece of aging down a little bit more, which it wasn't bad, but I'm just competitive, right? Like, yeah, I want to be like sub 30.

I don't know if that's possible, but I want to work on it. So my after I got my results, I'm like, okay, I'm just going to be stress free. Or if there is, I'm just going to just let it roll.

Like it will be fine. But but yeah, I like that that study showed that the acute stressors because pregnancy isn't forever. You know, Covid isn't forever, that it actually they came back better.

And, the body does like a little stress. But yeah, it's that chronic stress like chronic trauma. I have a lot of patients that have childhood trauma that it's never resolved.

And it just sits there in the limbic system and their body is always in fight or flight. So it'd be cool if they did a study about like an ace score, you know, as like childhood trauma, you know, with aging.

It would be cool if they did a study. They have them, they do this. So what is it? Show? Oh, yeah. I mean, exactly what you would expect, right? Who is?

I was actually speaking with, Doctor Andre Cardenas out of Stanford, about this last week. He does a lot of work in, like, societal based epigenetics, and he's published a lot about that.

A lot of other researchers have. Of course, the more Aces you have, the more advanced your biological agent is going to be, period. I mean, there's a very, very clear not necessarily I won't go as far to obviously, say, causation, but very, very clear, super strong correlation.

Yeah. So they looked at the pace of aging. It'd be cool if there was a symphony like looking at what organs are aged more. What's childhood. Yeah. No symphony I think again it's still so new.

So so yes. Yeah. But in pace. Absolutely. It's included in like all of those studies they looked at and I think, yeah, all of the clocks across the board increase.

Yeah. And I, I, I certain ages so obviously so I have four kids and all of them went through the pandemic. Right. And I feel like my he is almost he'll be nine in a couple of weeks.

I think he was affected the most. So this was like kindergarten year for him. So I don't know. And I've heard I've talked with educators and they've like agreed.

Like that age was kind of hit the hardest. So, you know, I hope that that doesn't sit as trauma for these, these kids, you know, because I think I mean, I think the pandemic was kind of traumatic for, for all of us.

So hopefully, you know, we can all heal from that and come back stronger. But I yeah, it was just interesting because I saw it affect all of my kids differently because they were all different ages like interesting.

Like, yeah. Yeah, like really it just affected the one little bit more I could tell. So it was just it was interesting. Yeah. So have they with the new I know the pace of aging.

You said not a lot of supplements move that needle, but some pharmaceuticals. They've done studies with. Yeah, yeah, they've done, you know, studies on metformin, rapamycin, and, you know, healthy cohorts too.

And those look promising. You have to keep in mind when you look at this data that's coming out with the Yale study as well. Some of these are diseased populations with medications, right.

Like HIV populations. So although it's a really great study, it's going to be an awesome review. You have to take into account like hey, who is study population, right.

How are these results actually validated? But yeah, rapamycin Em form and stick out to be pretty good ones. We know again. Yeah, yeah. So and that's the interesting part is, like you said, these are more disease state people that were in the study.

So if someone's just like trying to biohacker or do more longevity space, it's kind of different because there's not always the studies out there. Yeah. Yeah.

And we so in the healthy cohorts we do have we still absolutely see change. Which is positive. I think we didn't we'd be like a lot more worried. Like, hey, maybe we're only picking up.

Maybe it's the disease that's causing the signal, not the signal picking up disease. Right. It'd be the inverse. But again, it's still really hard to separate that, I think.

But the fact that we're actually seeing changes in healthy populations as well is pretty promising. Yeah. Yeah, it's definitely great. And the more information about your health, the better is what I tell patients and why I have this by regulatory or longevity program that I love to do is people because, you know, when you know what's going on with your body, you can improve it and make changes.

So what are the future developments that you have?

Future Epigenetic Risk Scores and True Health

Combining epigenetics with functional medicine. I know you hinted you're coming out with a new exciting test. Anything else that you see in the future with, with true diagnostics or elsewhere in the space?

Yeah. So the methylation risk score, as I mentioned, that's you know, fast forward hopefully earlier, but 6 to 9 months from now we're actually releasing a new products here in like a week though.

I think you'll like this one doctor Jen. It's called True Health. It is going to be reporting out nutrient and health system and conditions through the lens of epigenetics.

So think your vitamin levels, your antioxidant levels, mitochondrial health, energy metabolism, individual hormones. Actually, different supplement levels will actually be able to tell you your level of alpha glutamate, sperm, iodine and really talk about where you're deficient.

Right? We just mentioned because you have to know your decision to actually make that effect. So, that will launch. Yeah, here in a couple weeks actually from the time.

That's exciting. So will that be just a part of the true diagnostic test and add on. Yeah. So we'll kind of have three products. Then they'll be true age where you can do your biological age.

They'll be true health which will be that nutrition kind of health system condition panel. Or you could do true age and true health together. Nice. Yeah. Nice.

That's really cool. Now for the true health, are you going to suggest people come off their supplements for, a little bit of time or continue their current supplements, whatever they want to know, right.

Like is there a supplement? Is there supplementation too much even? Right. Are you, too high in that particular biomarker? Like a lot of people are taking, probably way too much GnRH and a man.

And we can actually see that in the two pi marker, which can be, indicative of, worse cardiovascular and kidney function. That's actually one of the things that we measure that I think is, really exciting outcome on the panel to.

Yeah. So for those listening so just for nicotinamide increase energy, you they're putting that in a lot of supplements right now. Is that what you're saying.

You're just seeing people over use it to increase energy. Yeah. Yeah. There's a kind of a metabolite you can give off. That, is nicknamed 2PY, and basically an increase in this particular metabolite if you're taking too much, gentlemen or GnRH can cause issues with cardiovascular function and kidney function.

Later on. So something to be aware about. Right. So, so interesting. Yeah. Yeah, we're excited for it. Fun little things like that to to nerd out on. And that's what's great because gosh, how many times you take a supplement and you're like, should I keep taking this?

My patients are always like, do I have to stay in all these supplements? And it's like, well, it depends on you, your genetics, where you live. Because I was talking with Hannah earlier, northwest Ohio, there's a lot of glyphosate.

So we always have to like protect the gut, have gut health in mind when we look at our daily supplements. But it's going to differ for everyone with their genetics and, you know, maybe you could scale back a little on the supplements right after they get one of these reports.

I'm excited I will I'll be the first in line for this. That'll be a good one. We're excited about that. So yeah, basically, you know, tree age, biological age, true health, more nutrient, deficiencies and health and wellness, breaking things down into simple conditions.

And then basically the methylation risk scores, once we're able to provide them, we think they'll be called like true risk or something like that. Yes. Yeah. Yeah.

Keep it all in the true I like. Yeah. Well this is amazing. How can people find out more about your company and, you know, work with someone to get one of these tests and go through it with them? Yes.

Just go to true diagnostic.com. True diagnostic is cingular.com. And more than happy to answer any questions I'm Hannah one. I'm one of the co-founders and the director of clinical testing as well.

So my email is just Hannah now at True diagnostic.com. Yes. Awesome. Well thank you so much for sharing your knowledge and your pursuit of better health.

Like these tests are so important and your passion is great. As we find out more about our health, it's just going to change health care. So it's so exciting.

Yeah. Thanks so much Doctor Jen, I appreciate your time. Thank you for tuning in to Doctor Talks. We hope today's episode has enlightened and inspired you on your path to optimal health.

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