Introduction to Ryan Smith and True Diagnostic

Welcome to the bio optimized summit where we are exploring the next level of physical and mental health you can achieve through targeted and intentional optimization.

I am your host dr amY and today I have with us Ryan smith now. Ryan is someone that I've known of for several years because of his work with uh the peptides and tailor made compounding and I've used that for some time and so a little of his background. He attended Transylvania University and graduated with a degree in biochemistry and at that time he had multiple research internships at the university of Kentucky and then University of pennsylvania, studying large scale protein synthesis and physical chemistry.

He then went attended medical school at the university of Kentucky for two years, finished all of the educational curriculum past the step one board the US Emily Step one and then decided to leave and open a pharmacy that focused on peptide synthesis and formulations for pharmaceutical preparations.

And since that time tailor made compounding has become the fourth fastest growing company in health care and 21 fastest growing business in the us tailor made compounding was the first pharmacy to offer an extensive list of peptides in the United States and continues research and expansion for the use of these products for the integrative medicine.

Sir. Space since then Ryan has also opened other businesses including his newest venture, true diagnostic, which we're going to spend a lot of time talking and picking his brain on today and this is a company focused on methylation and and a test an array based diagnostics for life extension and preventive health care.

Ryan thank you so much for joining us today. It is really a delight and honor to have you here. Yeah thanks so much for having me. I'm looking forward to talking good and I love that we both have a biochemistry background which means that we can geek over the science and and so I appreciate that perspective that you have and the work that you've done with the peptides and then now with the methylation stuff. So let's start with that and really help our audience understand genetics versus epa genetics.

What what are we talking about when we use those words? Yeah absolutely. So so from from people who are not familiar with this sort of new field of epigenetic um this is sort of looking at how your genes change throughout your lifetime. Um you know I always talk about 23 and me and an anti.com who look at some of your your genotype.

So your underlying genetics those are often use the analogy of like looking at a light bulb um you can look at how it's created, you can look at the infrastructure exactly how it's shaped and designed. Um But what good is it unless you know if it's on or off. Um And really that's what this idea of methylation um looking at these epigenetic changes, able to tell us um You know every cell in the body has the same D. N. A sequence.

Um But what makes our skin cells different than our hair cells and it's about what's being essentially turned on and off in that to sort of give a phenotype or uh sort of how our cells behave. Um And and the really cool thing about epigenetic says I always talk about um you know jim Watson one of the discoverers DNA uh he was afraid to know as a poet four variants because he was he was afraid to see that hey if I know develop alzheimer's what can I do about it? And you know I think since then we we've known that there is some things you can do to prevent risk.

Epigenetics vs Genetics Explained

But the thing about epigenetic that's really really interesting as well is that you can actually change your epigenetic. And so we always like to say you know your D.

N. A. Is not your destiny. And I think that um this whole idea of measuring epa genetics uh allows you to sort of uh

to take your health care into your into your own control in a way that you haven't been able to before because this stuff is very very new. Um And in the way that we're using epa genetics is by looking at markers on the D. N. A. Um that are called methylation.

So these are just spots that happen really at the beginning of all of your genes um that really prevent it from being transcribed. And one of the things that is really really cool about these particular markers is that as we age, we all sort of methylated markers on our D. N. A.

At a very very predictable rates. Um meaning that for the first time ever we can actually look at someone's D. N. A. And get an idea of how old they are.

Um and that is really really exciting, has a lot of different implications. Absolutely. So when I was in the lab and doing my biochemistry work, I was working with D. N. A. And this transcribing of DNA that you describe.

And so for those in the audience who may not be familiar with that, like the D. N. A. Is kind of like the alphabet where it's it's a certain sequence of letters you could call them letters.

And then these method groups are just these simple carbon groups that are on those, you know, letters And it says, hey, read this section here or don't read this section here and then from there we make our proteins And so it really like epigenetic is at the foundation of our protein expression and everything that our bodies can do then. And so this is really cool that we can actually start measuring this methylation.

And this not only has implications for aging but this is they're looking at methylation for generational trauma, generational impacts of famine of stress of war and even certain diseases like autism. And I'm seeing it more used in things like psychiatry with different mood imbalances. So it's like epigenetic right now is this booming field. And so tell us more about this test that you have developed for the methylation. Yeah. So first and foremost you're right.

I mean there are so many different tests that are being developed out of here. Um, you know, one of the biggest things in epigenetic right now is is liquid biopsies where they're able to take your blood and see if you have cancer before really when it's stage zero before you can detect it any other way.

And so there's a lot of different avenues of this epigenetic measurement. Um, but the one that we're really interested in is one sort of called biological epigenetic age testing. Um, and and the reason that we're excited for this is because uh you know, biological age is a concept of trying to figure out how old your body is. Um, you know, I think everyone knows people who are 70 who need a lot of help or and then people who are 90 who need none.

And and um, and so age has a lot of different uh presentations, you know, some people age at a much different rates and um, ages is still the number one risk factor for all chronic disease.

And so the idea is if we can have a surrogate marker. Um that is the biggest predictor for disease and sort of can give you a snapshot of your over your overall health. You can really look at changing that marker for, for better results and better odds and, and that means better uh sort of health span.

So how healthy you are and how good your quality of life, but also longevity. Um, and and seeing how long you're gonna live. And so our test really, you know, sort of, we would take your blood.

Um, we would really give you a biological age. We would give you the age that your body is. Um, and because this is so highly correlated to all chronic disease, it really is sort of a snapshot of how well you're doing, um, sort of with your own health for, for your entire life.

And I love that you're doing this Ryan because as you're talking, I'm thinking of how much these chronic diseases are imbalances that are going on for a long time in our body before we ever feel those symptoms or definitely get a diagnosis of a condition. And so this is, this is aging.

This is stress kind of in real time that we're not even usually aware of because it's not, it's not at our conscious

level. And this test is able to give us that snapshot of, hey, even though you don't feel it yet, this is how your body is doing with this life process of, you know, taking on the different life stresses that happened to us.

And this is your age based on your biology and the imbalances or the car compensations that your body is having to do for the different life experiences and even genetic factors because those will play a role in how fast you age because of how resilient your system is or how prone it is to um getting infections or you know, not adapting to stress as well. So this is really cool that you can kind of take that process, get a snapshot in time before a person ever actually may have any symptoms or definitely a diagnosis of something.

Exactly.

Biological Age Testing and Methylation Clocks

And that's one of the reasons I brought up the stage zero cancer testing. Because I think it goes to show you just how sensitive this testing can be and how how early you can detect things in and change treatment.

Um, and like I said, you can actually change treatment because these are epigenetic markers and as you mentioned, uh with some of the other investigative areas, um, you know, a lot of this is still inherited, just like your regular genome.

Um, there's around 40% that you can't change. There's 40% of these methylation markers that are sort of as is however, 60% is still che and that allows you to sort of get that snapshot and then know exactly what you want to do with it and you can do.

You know, there's actually been a couple of studies which have been published today which showed that you can change this metric this biological aging metric and actually reverse aging. And that is that is hugely powerful for preventing all those chronic diseases like diabetes, cardiovascular disease, cancer. Alzheimer's, all of those things can be reduced whenever you're measuring this marker and taking the appropriate steps published.

And I know that you've got a lot of guests on this this sort of summit. Um we're probably talking about a lot of different things which are very tangential to the things that we're measuring here. Um most of these things probably have a really good impact and and and now that this testing is widely available and it hasn't been even just a year ago. Um it wasn't widely available.

The first interventional trial which looked at Metformin growth from one A. D. H. D. A. To reverse this epidemic which was published a year ago um or a little bit less than a year ago.

Um and so this is a very very new technology with a lot of implications. But at the end of the day what it does is let us know in real time and in a personalized medicine based so on an individual basis what interventions are working for you, how much they're working and then what we can do to modify that.

And and it really provides this this idea that we don't have to wait 40 years to see how a drug can affect our own bodies. We can really now do this in really a good three months to get an idea of how it's affecting our risk for all all of these diseases. And that really hasn't been possible up until then. And so it ushers in sort of an objective way, something that is scientifically validated, an objective to to look at how all these other interventions we're talking about and you're you're discussing with all these other people.

It really gives us a way to just look at this objectively and say, hey, this is working, this isn't and it makes it individual to you. Instead of having to say, hey, we're going to follow this standard of care, which is step 12 and three, you now can say, hey, this is what's working for you and we can we can change this really quickly, which is really like the whole basis for this summit right? Which is optimizing through being able to be very intentional and targeted in our interventions and to do that.

We need data. We need some objective data much more than subjective data and a test like this can really give us that objective data that can guide our different approaches and therapies to see what is benefiting our body and

what is not exactly and you know, prior to this, you know, we've had a lot of biomarkers, right? We, you know, a lot of people love the wearable biomarkers to look at heart rate variability or or some of those other things, even the blood measured markers like, you know, c reactive protein, all of those are very, very important. And this is not a replacement for those.

But what this does and what was so powerful about this is how well it's correlated to outcomes because and and how you can change the risk in real time.

Um so so, you know, I always one of the biggest examples is um you know, fasting insulin in HB A one C levels are are things that most people, most every physician looks at to measure metabolic disease.

And there's actually one specific site in the genome where we can look at to see if it's methylated or not methylated, um and actually have a better risk of predicting diabetes in seven years than fasting insulin in A one C. These things which are very, very common, which just goes on show the predictive power.

Um and and for instance, if we're doing some things to like diet and exercise, we can see how they're actually changing that specific marker to reduce risk of diabetes.

And so we're getting sort of, I guess this this idea of um you know, developing risk and making treatments really really quickly and really, really fast. And so you get that objective data in addition to all the other things that you're doing. Um and these are tied to those outcomes which are very important.

And I love how you're talking about how so predictable the body is. These patterns are very predictable and so we can develop these tests and get this data that are so predictable. That really help guide what we want to do today to influence our health 10, 20 years from now. So Ryan, let's geek out a bit about the science of it. How did you develop the test?

What are the algorithms that have gone into this test that allow it to be that predictable? Perfect. Yeah. You know I wish that I could take credit for this. Um But but you know the scientists have been developed by um starting in 2013 so again this is very very recent.

Some of the first generation what we call them clocks. These biological age clocks were really developed out of two places in California. One was with dr steve Horvath who I imagine is probably gonna win a nobel prize for this type of diagnostic and the other one was Dr Hannum Greg from SAn Diego.

Um And and what they did is they both developed a clock which which honestly doesn't have a lot to do with the underlying biochemistry. What it was sort of looking at is using computer learning statistics to tie variables together.

And so they looked at a large large genome spread and and basically took a lot of different age groups and they looked at how different markers change with age.

Um And so what they develop were these clocks which are extremely predictive of age by looking at certain methylation marks. Originally they measured around 450,000 markers on the DNA and then pulled out around 353 markers which are most highly correlated to age.

Um and as a result this is the type of thing that's actually already being used all around the world. It's being used for things like dating refugees um to see if they're minors or if they're adults and if they're capable or I should say uh if they are eligible for asylum. Um one other reason is people are using it now for crime scene investigation. And so now you can obviously know the sex via the D. N. A. But now you can also know the age.

And that also narrows down sort of the sub the suspect list. Um In 2017 Dr Horvath created another really interesting clock called grim image. Um And uh and instead of using age as the outcome, he sort of trained it with multiple other variables. And so it sort of became a composite biomarker clock um That was able to predict death. And so now that's even being used by uh companies like insurance companies to see how much they should charge you um in order to make back a premium. And obviously all of that is very very interesting. But the

underlying science for how this was discovered is basically just looking at computer learning and and and trying to figure out which markers on the DNA are most correlated to these outcomes.

Um And so there's a lot of implications to this really. The reason I got interested those are all very very cool. But they don't really, I would say affect this area of preventative medicine.

Um And really whenever I started involved was that year ago study that looked at the growth hormone Metformin and D. H. E. A. Is often called the trim trial.

Um and that was able to reduce epigenetic age by around 2.5 years um in just 1.5 years of treatment. And so that was when I got really excited because I started to think, hey these things which are relatively common um can reduce epidemic age this much. What can we do with all these other interventions which haven't yet been validated or looked at?

And that was really excited me. Um and just to put this into a little bit of context as well, if you reduce the epigenetic aging rate by seven years across the entire population. So if you're 50 and you're 43, you actually reduce disease by 50%. Half of the people in the world are no longer sick. And so you can see how much, you know, a study that looks at 1.5 years of treatment reduces the 2.5 years.

It's already a great start to to cutting disease in half in the United States. And so from the test that you offer it with true diagnosis. Now you get a value right a value for your biological age, correct? What are the factors that go into that value?

Can you can you clarify that a bit more? Sure. So so the the actual that what I have the actual value input output is is just an age.

How the Test Works and What It Measures

Um So so you know you would look at your age and uh and see really and compare it with your what you want to see is that you're going to be younger than your your actual chronological age. Unfortunately for most people who live in the United States, we tend to see them being a little bit older and that might be you know, lifestyle or environment. We're not really sure some of the reasons but we do know that the majority of people are a little older um Like our Western diet and and work schedule that have us sitting all day aren't helping us age.

Well I'm shocked right? It's not not a huge surprise. But with that being said the actual science that goes into this um is just the methylation values. We don't use any other information.

So we're just looking what really happens in the test is we actually isolate your D. N. A. Um usually from a blood blood stick. Uh and blood is very very important because that's the method which has been most validated.

And it's important to note that that are epigenetic aging is actually different in every different type of cell. Um Usually you know for instance our brains age at slower rates than the rest of our body whereas our our livers age a little bit faster rate. And so blood is is really important because that's how all these things have been studied. Um So we actually take your blood then we isolate your D. N. A.

We do something called the by sulfate conversion. And this is really how we look at the ePA genetics. Um So we actually take it from D. N. A. That that might be personally identifiable and turn it into something that's not personally identifiable.

We just are looking at at these methylation spots. Um Then what we do is we take these really sophisticated um sort of holographic beads. Um and and there are hundreds of thousands of these on these chips and we we really take the D. N. A. Put it on these beads um and and complex it together. And then we look with really really precise imaging um inflorescence to see really if we're getting a relatively binary results.

Um We're getting methylated or not. Um And we're looking at a large worth of DNA. We're looking at over 900,000

locations in the D. N. A. Um And and that's really important too because uh as we continue to develop more information about this test, I keep saying how new it is. But the good news about that is that there are new developments on a daily basis. And so you wouldn't just wanna look at one spot for one test because whenever something comes out tomorrow, you want to be able to use that information and apply it to your own health as well.

And so we measure a lot of spots on the D. N. A. And then we use our algorithm which picks out those individual locations, weights them together with all the data and all the patients.

We already have to read give out a biological age which sort of gives you that snapshot of how well you're doing. And so from your understanding of the studies and the literature with the changes in methylation that happen as a result of aging. Would you say that that equates to the amount of stress on the biological system in their lifetime? Yeah.

You know. Yeah, I think that's that's a really good way to put it. I think there are there are a lot of factors that go into this and we always try and give a little bit of context in our report.

Our report is really, really long. But as I mentioned, 40% of the things that are based on that report, you can't really change. And so a lot of people just like genetics are starting behind the eight ball.

You know, we have some people who have to fight a little bit harder to get a better reading than than other people who who have you know uh terrible lifestyles and and still read seven years younger. And so everyone needs a little bit of context to where they're starting. And the other thing that you obviously mentioned is this inter generational type thing um You know we're actually passing down these epa genetic traits to our great grandchildren. Um And so our great grandparents had an effect on what is being expressed in our D. N. A. And that's that's a pretty interesting point.

I mean it's pretty cool but I think that at the same time uh it's important to note that how you're living your life right now doesn't just affect you.

It also affects your Children in the future and by getting an idea of what's method and what's not and how you can change individual locations of methylation um to change expression that's obviously really really important to. And so you're going to come, there's gonna be a lot of information coming out about exactly what you're predisposed to based on things you can't control as well. Um And so for years Ryan I've been helping people support their methylation imbalances. Whether they tend to be under methylated like me or over methylated. And and there are ways that we can support the methylation system with the results from this test.

Is that something that we're able to do is like would we even look at those types of methylation support nutrients like the Sami or the methylation donors or the folic acid or no like the results of this test are going to lead us to different types of approaches and therapies and not so much this type of methylation support that that we're looking at with the yeah that's an incredibly great question.

Um And and it's a difficult answer because the majority of these algorithms are reading out values which have been controlled for based on those other factors.

And so we're not even though we're measuring methylation we're not necessarily looking at how methylation occurs. But with that being said I think that there are a lot of arguments to say that if you are not a good method later that some of the processes by which your DNA is methylated are a little bit out of control and not properly regulated.

Um You know I I always think that doing Sammy actually as you mentioned which some people like to supplement for for for a lot of brain health for osteoarthritis for a lot of different things. Um It is the factor which is actually putting those method groups on our D. N. A. Um And so if someone has an m th fr variant which 70% of the population in the United States do.

Um They might not convert to Athenian which then down goes to Sammy. And so you might not have enough of

those co factors to appropriately methylate the D.

N. A. Um And unfortunately there are no studies to sort of draw out those links um to look at how people are methylated versus their biological age. Um But but theoretically would imagine that they would have some type of impact. Um And so so I always think that you know that Sammy and or method foley are are never bad things to supplement with.

Considering how prevalent some of these SNP variants are. And I'm also thinking of all the other nutrients and vitamins co factors that are part of that methylation system. And in our Western world I start to see a lot of those deficiencies, functional deficiencies right?

They're not going to show up necessarily as deficient on a regular test with a doctor but they have a functional deficiency of the magnet museum or B vitamin B six B 12.

And all of those are going to impact the methylation system. And I would imagine then that with time with several years then that's going to be a stress on the system and would actually contribute to this aging process.

Using Results to Guide Optimization

That would be picked up by this type of essay. Absolutely. And I always like to draw a comparison. I think that most people who are interested in this idea optimal performance and optimal aging have generally heard about dr David Sinclair's book lifespan.

And he often he uses analogy in there about the situations um where he talks about them being the National Guard right? He talks about how whenever they're at home doing their job protecting the D. N. A. Everything's okay.

But whenever they get recruited elsewhere, often that that process of protecting the DNA becomes a little bit and therefore starts to deteriorate over time.

Which might lead aging. And I think that you can make a very similar comparison to all those methyl donors where if they're they're not able to um to to be the co factors they need to be for uh these metal transfer races that your D.

N. A. Isn't being regulated and might lead to downstream consequences that your body doesn't necessarily want. But wasn't able to change because they didn't have the necessary goods to do the job.

Yes. Now you use the word sir two wins Ryan. And I'm not sure that anybody else in the audience with the without a biochemistry background is going to know what you mean. So just explain that so that they can really understand that analogy that you make because it was a pretty powerful analogy.

Yeah. So so you know, I can talk about a lot, you know, I think that um probably a couple of the topics you'll have on here might have to do with this N. A. D. Salvage pathway in a D. S.

You know, uh just a very popular item now in the preventive medicine space because what the statins do is they use N. A. D. To sort of regulate genetic expression.

Um and and it's been shown that whenever we activate these situations in animal species and even in yeast that we can extend lifespan in in pretty large ways.

And so uh you know uh 10% or over lifespan extension in a lot of different studies. And so um these sort two in the sort of as a regulator of the way that we sort of have this genetic expression um giving them optimal functioning through things like resveratrol or trans resveratrol, things like taro still being a lot of these activators which sort of have an effect on the body to to appropriately manage the responses that you want for for longevity?

Mm hmm. And yes, thank you for bringing up the N. A. D. Such an important co factor in all of this process for optimization. Mm hmm. So a person gets their essay back there like ah like my age, my biological age is more than

what I want I want that lower.

Is that possible? What are the types of things that they can do? Would you recommend that they track that? And so later on that they get another test.

What what would be the best way for a person to you this type of test to really truly optimize? Yeah. And and that that is exactly where the rubber meets the road. Right. This this test is great to gather objective data. But if you can't change it, what's the point?

And so we're really really trying to add a lot more scientifically validated interventions. However right today there's only been one trial which is published as I mentioned, the Metformin girl from an A. D. H. D. A. There's actually another one coming out which looks at nutrition and nutrition and how that affects the result.

Um This is something that you want to check multiple times. So you wanna gonna you're gonna want to probably take it at least once a year, maybe twice a year to see where you're trending. And if you're someone who likes to do multiple interventions um controlling for those interventions and say hey I'm gonna you know, change nothing else. None of my exercise on my diet.

But I'm gonna add in a. D for instance and see what happens to my health by doing those types of investigations. Even on personalized anecdotal scale, you can get a really good idea of what's working for your body.

Um Today we know that that some of the things that make a big deal um are are things like growth hormone. Um you know, one of the one of the things that happened as we age is our immune system sort of breaks down and you've seen this with Covid that's why people who are older or even the flu have higher likelihood of having you know, death or more complicated symptoms because the immune system isn't doing as good at fighting some of those, those pathogens. Um What happens with growth hormone is actually able to rejuvenate one of our immune sort of systems in the body called the thymus.

Um And by by increasing sort of the time able to change those immune cell subsets and and increase the efficacy of the immune system. So we know that anything which is affecting the immune system is generally probably gonna have a pretty good response on this as we age.

Another really interesting I should say, area of research, it looks at um young plasma or plasma apheresis. Um There have been some studies showing in mice that were just taking not taking a look at epigenetic aging particularly, but even just looking at mice, they've shown that if you infuse yet the blood and plasma of young mice into older mice, the older mice actually get younger.

Um and and actually vice versa if you do it the opposite direction, the younger mice actually get older. Um And so we know that that that was looking pretty good for for aging treatment. Um But even from an epigenetic biological clock perspective, there's some data now to suggest that in mice um that same type of treatment can actually reduce their epigenetic gauging. Um And so there's a lot of really interesting pharmaceuticals, but I can't stress enough that you can change this with no money.

Um You can change this with just by living a great lifestyle, eating a lot more chicken and fish or the mediterranean diet, um doing uh sort of at least one glass of wine per month or one glass of wine per week.

Um You can do it by by exercising more frequently but not too much. Um and then uh and then you by getting good sleep and reducing stress. All of those things are free interventions which will have an effect on this and reduce that epigenetic to make you live longer and better lives.

Yeah, as I think about what are the most important systems in our body thinking of the body as a machine. Right? When I think of what are the main drivers for stress on the system as a whole?

The nervous system and the immune system are the two that come to mind as really the root of then everything else and those affect the digestive system, those that affect the hormone system. But those two really for me have

been like the core of what develops as stress in our body and this aging process.

And so and that's why I've gotten into using a lot of the peptides, right? Because there's peptides that can be very intentional and targeted for the nervous system and the immune system.

Future Applications and Where to Learn More

I like to use the peptides also the target mitochondria because when I'm targeting the mitochondria, I know that I'm improve the health of the nervous system and when I boost that nervous system, I know that a person is going to be able to handle more stress in life without it getting to that point where it's overwhelming and it's causing these big imbalances and compensations that are going to affect and trickle over into all the other systems in their body and then the methylation because of the amount of stress.

So yeah. Yeah. And and uh yeah, I think that that's that's a great point. I think that one thing I would like to just stress for anyone who's listening to this, who who's curious about their own biological age or wants to get this testing done is is to uh, this is so very new that you can add actually a lot of information to this whole investigation. Um, if you go to our website at true diagnostic dot com tr you diagnostic uh we have actually a forum where people can even say, hey, this is the intervention I did for three months and tested before and after and this is the result I got. And by doing that, we're gonna be able to look into a lot of those things, things like nervous system function, things like mitochondrial function and really start to tease out what's the biggest factors in in changing this. And hopefully, you know, at the very end of the day, not just get to treatment and preventive medicine, but also sort of look at the underlying cause of exactly why we age and that's pretty exciting. This this is like this is really exciting.

Ryan this is this is like cutting edge medicine really applying the science right? And the lab stuff into actually real time. How do we improve your health now and for the future very objectively.

So I'm sure that you've had enough data coming in, enough feedback coming in from people that you've had some patterns, some very predictable patterns that people are consistently saying like this is what helped me shift the results of this test.

So you've you've mentioned a few can you can you be more specific and clear on what specific things have been just across the board. Yeah. Yeah. So I think that, you know, it's always a little bit difficult without these large scale studies because there's so many different variables in life. You know, people might say they're low carb and have a very different definitions of other people who are low carb.

But with that being said, there are some trends which we definitely see um and one of which is metabolic health, you know? Um And this is one that's probably very very intuitive but um generally that if someone has a higher B.

M. I. Or is has uh less insulin sensitivity traditionally will have worse epigenetic aging. Um and that can be due to a whole host of factors. One of the other things that we see is that um you know, I we often talk about things like signal itics, senescent cells um and it's a very complex, which I won't try and bring up here too much.

But one of the things that that we traditionally see is that people who have a predisposition to risk for these senescence associated diseases where there's high inflammation in the body. So things like high c reactive protein or I'll six and just inflamed people um traditionally have worse epigenetic aging and fixing that inflammation and fixing that metabolic disease are some of the two biggest movers of what we've seen from an uh an aging perspective.

And have we seen any specific patterns yet in terms of N A D across the board or other stuff that's across the board or at that point it really is so individual that each person really does need to be targeted and intentional and see what changes in their test.

So we haven't yet, but I think that just because we haven't had large enough sample size, we probably will within even just a few weeks. Especially if if if we always encourage we do a large survey to just see what other interventions people are doing.

Um and so if any any patient is reading this, who wants to do this testing, make sure you take time with that survey to give us some good information.

But we're actually doing our own study investigation dot right now, 14 different studies that are that are already approved and hoping to do more, one of those is looking at at N. A. D. Injections um and others are looking at any precursors precursors like the nicotine made mono nucleotide or the nicotine, my driver side. And so hopefully we'll be able to add a little bit of context and say um you know, are these things actually helping epigenetic aging and if they are which one is the better one and and what's the better procedure and and give a little context of which one people might be wanting to use?

Right, we got to collaborate on this like we gotta we gotta put together an actual study and do get some real data in a randomized controlled trial study and this could be huge.

Exactly. And and and hopefully we can do that with anyone who's listening. I would encourage if you have any interest to be involved in some of these investigations, reach out to us a true diagnostic and we love to connect with practitioners like DR AMY and and actually get some some really good interventions. Good. So Ryan, what are some other developments that are coming out from this? Yeah. So as I mentioned this this type of testing isn't just for aging. It can also be, you know for disease risk like diabetes. Some of the things that we're really excited about our are things like length estimation right now.

You know has been around and really a lot of people have thought about it for years is the way to measure aging. Um but what we see with this epigenetic age testing is that it's much much more correlated and predictive of different types of outcomes.

Um And and actually the correlation values around double what they would be for telomeres. Um And so we're actually gonna be using an epigenetic based test to predict telomere length, which is good for some some other types of considerations.

Um And you know, it's an important aging biomarker in and of itself. And so we're gonna be doing that. We're gonna be able to do things like like measuring the burden of Sin essence in particular people um which traditionally hasn't been able to be done. Um And uh and then we're gonna be able to predict a lot of different disease risks like Alzheimer's Parkinson's and you know, for me I have an A. P. B. For variants um which predisposed to Alzheimer's puts me at an increased risk. And so having these epigenetic diagnostic factors which might be able to tell me which interventions are helping fix that risk is really exciting. And so we'll have those for all different diseases uh and and continue as we get more data to have some really really good predictive algorithms. Great and where can people find more information about you and your work and the test.

So I would recommend just going to true diagnostic dot com to start um you know on there, you can like I said read through the forum. We also do a blog post which educates on all these different factors which might affect the ePA genome. And there's so many like I said there's two or three articles a day being posted on on how your effigy gnome affects different styles of life. Um And so I would encourage everyone to maybe use that as a springboard. Um and then uh and then get involved in the form where we're gonna have sort of everyone who's interested this all in one place trying to share tips and tricks and and and just share more information.

Great And I know that true diagnostics has is a sponsor for the summit. And so I'm really excited to be able to promote that and get as many people hooked up with this test as possible because the data is really where the value is where the key is.

So thank you Ryan for joining us today. Thank you so much. Thanks so much for having me and I look forward to talking again and maybe planning a study.

Absolutely. And I'm dr amy don't forget to purchase the discount while it is still available and check out the true diagnostics test. And together let's find that next level of health and Aliveness