Introduction and guest backgrounds

– Hello everyone and welcome to the microbes and Mental health summit. I'm your host, Dr. Miles Nichols and here I am together with Dr. Daniel Stickler and Mickra Hambleton who are founders of appear in which specializes in working with human performance and longevity, age rejuvenation and consciousness, which is really an interesting mix to mix consciousness and age rejuvenation.

So we'll get into that and we're going to be discussing here how to optimize an aging brain. And so in relation to microbes and mental health, we have mental health concerns. We also have cognition and we have function that we can optimize with the brain. And I'm really it's an important aspect that I want to make sure that we get on the summit and I am happy to be here with the two of you.

Welcome. – [D] Thanks for having us. – So give just a real brief back story to why you became so interested in consciousness and optimization and brain health.

– [D] Well, it was, it started with a disenchantment of medicine um from the time I went into medical school I realized it was disease model and and pharmacology.

Um so I looked at what I could do. I ended up going into surgery, was a general vascular surgeon for 10 years, started doing like just as a hobby optimization care. Um uh and just did that for five years while I was doing surgery and then one day I was like, this is what I always wanted to do.

So I walked away from surgery and we focused on this. Um she was running my, my hobby for me for a while, the the age rejuvenation and uh, and over the years we just, we have gathered a ton of additional pieces that we add into it.

I mean almost every year there's something new. I mean, we went from the body, um, optimizing the body through nutrition and exercise, all the lifestyle factors. We got into the brain and started looking at the brain and how it functions and how we can optimize that and then the autonomic nervous system. And we just kept adding more and more things until just in the last couple of years we realized how much of a role consciousness plays in optimization.

And so we added that piece in there and it's a pretty robust program to really optimize the human system and create anti fragility. – [M] And mine came through performance as a child. I just knew I was limitless and my whole life just designed itself around that. I did 30 years in the military and worked in human performance really from the policy level to the tactical level of how can we show up as the best, the best physiologic and um psychologic spiritual version of ourselves to make good choices and to ensure that we're able to come home to retire to our families after our military service.

And so it was a combination of practical and now the consciousness pieces of course I wish I had known then what I know now. – Yeah, yeah, well, interesting backgrounds, a surgeon and military performance focus coming together to create this optimization with this emphasis on consciousness.

And although you know we didn't actually meet at a medical conference, we met at a consciousness conference um been to a medical conference together too.

How brain aging and optimization work

But it's interesting that there's this sense of how consciousness evolves develops and optimizes as well as the physiological body and the brain which is the main focus for today's topic that we can cover.

Also of course the consciousness side and the body side because that is important. So in relation to this discussion around optimization and how the brain ages over time can we talk a little bit about without optimization?

What tends to happen to brain function as people age? – [D] There's a pretty good progression on a yearly basis of loss of loss of volume in the brain in multiple areas.

And it's a pretty consistent process. You can accelerate it or decelerate it but it's still going to generally progress. So we've been working with techniques to really keep the brain in a healthy state, keep it from losing the volume.

I mean you look at covid right now and people experienced 10 years of brain aging just from a mild case of covid. Um That's been shown in multiple studies and it's very concerning and she's she's done a lot of the e e.

G. S on people after they've had covid and we had a pre pre one. – [M] But so if we if we look at, you know how we how we you know actually evaluate the brain to see what's going on in the gut. Which is interesting right?

The full Q. E. G. Or the full brain map that looks at all of the unique sites in the brain gives us what what's the alpha peak frequency and that's an idling speed that we all have. And there's a range of you know, normal really 9 to 9 to 11 being on the fast side.

And when we have a baseline of that, what we're able to do is is really know what's going on in the brain. What life has created as an expression in the brain waves and tying that with neurocognitive evaluations.

Um you know we we can begin to watch over time. What happens as we age. What happens is there's insult to the gut insult, you know, T. B. I. S. And you know, concussions and different things.

And in that way the tracking allows us to be able to intervene to restore it to its once um you know, hopefully thriving um performance. – Well let's make sure that we get some relevancy here and why should a person care if the volume of their brain goes down as they're aging? What kinds of manifestations or problems might occur with not doing anything about this and allowing the brain deterioration to occur uh in today's world which may may be different than what naturally occurred a long time ago with exposures to things like covid as we've discussed as well as talks and accumulation and many other infections and things that are occurring in today's world a little different than historically.

What kinds of things are we seeing expressed symptom wise and or with disease states as a result of this brain mass loss? – [D] Well, there's a bright side to it. Once you lose enough mass, you won't care. So you can look at it that way.

Now there's, I mean a lot of this, um, it comes down to memory is one of the biggest things and that's when people start to feel like they're, they're not able to grab words or they're not able to remember certain things.

They start getting concerned because that's the most common thing that you hear about. But they're earlier signs that you can, you can pay attention to, um, people with hearing loss. Well, if you have hearing loss, you're going to accelerate the loss of the brain.

But the outcome wise start losing focus. The, the idle rate of the brain will start dropping. Um, and that's, I mean that Idol rate is what, you know, like you're sitting at a stoplight waiting for the light to turn green.

You're still aware of everything, but you're not actually in action and when that idol rate goes down, it slows you down quite a bit. – [M] And you simply put, it's like, um, you know, the person who is already on the airplane in first class having their, their t, um, before another person even knows that they're going to go on a trip.

I mean it's that speed difference is, so, is so, so critical concentration focus, you know, the ability to be motivated and inspired all of the things, you know that are in the executive skills centers begin to have a sort of diminished um effect.

– The person who laughs at the joke after everyone else had moved on and oh, I get it. – [D] So you're in trouble.

Brain fog, memory loss, and gut-brain links

– So then when we're talking about symptoms that some people have like brain fog and starting to get things of subtle things that they're just noticing that they're not quite as as focused or dialed in. Maybe they're having some sense of difficulty or cloudy thinking. Maybe it does take just a little longer for stuff to come. Maybe they're finding themselves searching for a word just for a little bit of time Or are these all kinds of things that we might see in this case? – [D] No, I mean we've seen, we've seen all of that with people coming in. Um, those are brain fog is typically the all encompassing one that, that most people will describe because they can't really put their finger on what it is that's happening. Uh, finding words or inability to make decisions. They just tend to not be able to be very directed in in what they're trying to achieve. – [M] And and you know, with the brain fog there's so much, you know, like on the brain map we can see uh inflammation or or indications of inflammation in the brain and as we as we work with the complex systems approach, we look at, you know, their genetics and how epigenetic effect that so the God one which you can um chat about, you know, it's interesting how the expression of the genes and then the nutrition that interaction can create brain fog, lack of sleep. So many things that that actually do show up in the brain. – [D] You know what she's talking about with the the Gad one is people have some people have genetic variants that will make it. So it's difficult to convert glutamate to gaba in the brain. That's what the Gad one enzyme will do.

And one of the interesting things they found, we used to, you know when you take Msg and people just talk about, you know, their how it activates their brain and all that. That's that's glue tannic acid is in the in the msg. It's most common source of it.

And they used to see that people would like, especially people with mental illness like schizophrenia and that they were always worse when they were taking a high glycemic acid diet because they were boosting their glutamate. But recently they found that good glue tannic acid doesn't cross the blood brain barrier very well at all and it doesn't increase after a meal or anything like that. But what they have recently discovered is that it's uh mitigated through the vagus nerve where they'll consume this and either the high glycemic acid or they're actually postulating that the umami taste will actually increase glutamate release in the brain just from the taste being fed back up through the nerves and not through any any direct source.

– Yeah and and this is just for the audience glutamate and gaba. Glutamate excited. Oh and it can be toxic and Gaba is relaxing. So this sense of that this conversion normally would allow for a person to be able to relax or for anxiety to decrease or to go to sleep. But sometimes there's this excited oh toxic effect in the brain where people are ruminating, anxious unable to sleep.

And this can be mediated potentially by vagus nerve connection and also by potentially high glycemic acid and food. And then this genetic predisposition towards got one mutation decreasing the natural conversion that's occurring there.

So then tell us a little bit how's the gut play a role in this? Because I know we talked about this Q. E. E. G assess assessment tool to map the brain which is a fantastic assessment and I think it's really starting to become um more well known. It's it's been something that I have seen creeping up in people's awareness about as a tool to look at brain function.

How does that relate to the gut. We already just talked about the vagus nerve but where where is the gut brain connection play into this whole picture?

– [D] I'll take that one. So we don't know exactly. I mean we do know that the gut microbiota does have an effect on the brain vice versa. You take long term meditators, monks and people who aren't meditating but eat in the same you know facility. Or these monks where this is a small study but they looked at the gut microbiota of both groups and they found that the monks that meditated on an ongoing basis they had a much difference um got microbiome despite the fact that nothing was different other than the fact that they were just doing the meditation pieces of it. And um I mean it was substantial.

They're they're back to Roy the species was like way high and there for making these was low and they're finding now that that that combination um having a higher percentage of back to royalties it's really beneficial to got processes.

You know you've got to look at the microbiome as a uh a nutrient factory. I mean we we don't consider the fact that there it's constantly secreting nutrients of different sorts.

You know you look at um fatty acid a mind so there's certain bacteria that secrete fatty acid a minds and they found that it was an interesting study they were looking at motivation to exercise.

And they found that that the more fatty acid a means that the bacteria was producing in the gut the greater the motivation to exercise. And they dug into this and they found that it's a it's a vagal um nerve process that causes the striatum to increase dopamine production and that's our reward area. And so the motivation to exercise was greater in that group. And they associated that with motivation to eat well. And all of this stuff that comes down to these these bacteria in the gut specifically secrete large amounts of uh of the fatty acid A.

Minds. Anandamide is the is a common one. And that's the bliss molecule interestingly. – Yeah. Yeah roots back to the Nanda and the hindu and indian tradition interestingly with the nectar of the divine nectar.

So there's this uh this is an important point. There's this connection. And one of my favorite studies that illustrates this as well as what you mentioned is the study where they took my two groups and gave one a sterile broth and the other feed with some lacto Vasilis thrombosis. And they had both of them subjected to a stress test and that was a bowl of water and mice don't like water.

They want to get out but they can't because it's a bowl of water and it's slippery sides. So they're swimming swimming, swimming trying to get out, trying to get out. And the one group with the sterile bra swam for if I'm remembering it correctly, I think it was four minutes and then gave up and just floated there and then the group with the lactobacillus prognosis and their feet, they were swimming for four, doing fine, five, doing fine, six, doing fine. They finally stopped the experiment at six minutes. They're like okay, I don't think they're going to stop. So they tried to figure out why and they looked at cortical steroid which is like cortisol in humans or distress hormone that mice would have them increase in the group that gave up at four minutes.

And it they kind of almost burned themselves out in a sense, they just gave up because they had exerted so much of the stress hormone that they had not been able to sustain. The energy.

And the other group also that had the the feed the probiotic in their feed. They did have corticosteroid increase but then they had a gaba increase that relaxing neurotransmitter in the brain that we just talked about and then it was corticosteroid then it was gone and it was it was gabby. These waves of gaba that were almost regulating on the fly to stress response so that it could be a more sustained and healthful stress response that wouldn't burn them out. And they would keep working.

They'd still have a stress response. It was just a sustained and resilient kind of a stress response that didn't burn them out and they thought well maybe this is the vagal nerve.

So what they did is they you can do this in animal studies. They took those mice and they just cut the vagal nerve and they said okay what's going to happen here? And they went right back to the four minutes and gave up and they didn't have the gabba. So they really really showed very, very convincingly that it is the signals from these bacteria in the gut sending via the vagal nerve to the brain to tell the brain to produce gaba.

And so and you're mentioning vagal signaling to produce dopamine as well. So we absolutely have very good evidence that these bacteria in the gut will help the brain in producing the neurochemistry. And this is I want to circle this back to the mental health issues that people have today many times.

The psychiatric medications are focused on modulating the brain neurochemicals. But if we look at why the brain neurochemicals become imbalanced. Sometimes we see that signals from the gut and there are other areas and

ways and reasons why those neurochemicals become imbalanced. Of course the drugs will not address those underlying issues and reasons why they become imbalanced.

So with relation to the aging brain, oh go ahead. – [D] I was going to say you know, most of the psychotropics are also antibiotics. They will kill bacteria in the gut. And uh you can look at the way some of them work and they after you've taken them you tend to have a bacterial mix that's similar to people without those psychologic issues.

And I mean I think almost all of them have some form of toxicity to certain bacteria. – Yeah. Yeah so there there may be and often is a modulation of bacteria as well as the neurochemicals.

So in relation to the brain aging for assessment we've touched on that a little bit with the Q. E. E. G. And you mentioned also a backbone of genetic screening and that we have a bigger picture not just of the brain itself but the impact of genetic predisposition such as God one maybe ePA genetics and ancestral history as well as diet nutrition the gut microbiota little makeup.

Assessing brain age and nervous system function

So what assessments are available to measure and assess the age of the brain? Is there anything else beyond what we've spoken to already? – [D] Yeah there's um there's a new company I'm not affiliated with them.

Um But it's uh called Brain Key. And what you do is you get an M. R. I. Of your brain and then you feed it up into this program called Brain Key. Um I think it's free to do it and then you pay $99 and it'll give you like a professional read on it. But it's an ai that it measures um all these different regions of the brain. And so you can monitor it.

You can have it done one time and see how you compare to people your age. But you can do it on going like every couple of years and see how quickly you're losing volume in different areas or maintaining the volume.

Um That's one area there's um there's a startup out of the Bay Area called Teal that they're um they're developing a proteomics analysis so they just do a blood draw and they can look at the podium and get brain age, which is unheard of. I mean this is brand new and then you can look at things like your your biologic age, epigenetic age.

It seems to correlate well, especially when you look at the the done it in pace of aging score that people have uh it can give you a pretty good idea of how the how the brain's aging in general.

– Just to clarify for the audience when we're talking genetic age, this is the epigenetic expression. So it's what's called DNA methylation. And this is looking at how genes are expressing and the there's a set of longevity genes and disease and aging related genes that are assessed and compiled into data that has good, Good, good validation behind it to estimate the genetic age and rate of aging of a person.

So if you are 35 years old and your genetic ages 33, that's your better than average on your genetic aging. And if your rate of aging is one year per year, your average if you're 1.1 years per year, you're aging at a rate that's higher than average so that's a little bit on that particular test. What what are the main one is the top ones that you tend to use in your clinic when someone comes and they want to optimize their brain.

They want to they may or may not be experiencing some symptoms like brain fog or some mental health issues or some other things that are going on with their brain.

But what what are your main go to tools to help people to assess at the beginning and then to retest if you do that and and how do you handle that piece for people?

– [M] You know I think are my favorite, my favorite of course is because this is in my wheelhouse is a psycho physiological stress profile and it's basically you know you you get the autonomic nervous system up with sensors and you have a 14 minute study that that creates a baseline of what the nervous system is doing along with the end title Co two carbon dioxide.

Um And there there are five different tasks Summer emotional, summer, mental, summer physical and what we watch is what happens to the C. 02 and and by inference oxygen delivery across the system.

And also you know all of the other markers muscle tension heart rate variability, skin conductance which is about emotional reactivity and in that 14 minutes were really able to see how life actually is done in that human system.

So it gives us hard data but also intuitive data of for example if someone wakes up in the morning and they they're just they know their day is going to be incredible but they back out, hit the garage door, spilled the coffee on their clothes, they're late for the meeting. They, by the end of the day they're what we call a mountain stress builder where the stress has built so high that the nervous system can't handle it. So they go home and have a martini or binge, watch tv or um you know whatever whatever the coping tool is working out, making love shopping. Um And so as we get that information along with the brain information and tying tying the oxygen delivery in the brain together with it, we're able to look at um you know, things like age related visa dilation. So so now we're not getting enough oxygen to the brain because this system is out of alignment and by changing by you know, keeping more C. 02 in the body and by increasing heart rate variability, you know, and all of this is done through the breath, we're able to have greater oxygen delivery in the brain which of course equals right greater greater blood flow, greater um Just even even perception, a greater ability to be in the executive skills center than in the in the fighter flight sort of emotional limbic centers And and so 14 minutes. That that to me is such a such a perfect evaluation to get so much information. – [D] And I mean it's it's the results that people get from it are incredible. I mean they their heart rate variability improves and that that's one of our best markers for the overall health of the system is heart rate variability. But you see such a dramatic change in them and they feel the change and it's basically teaching them to take control over their autonomic nervous system, which is uh that's a really amazing feat to do that and uh and so beneficial. – Yeah. It used to be taught in medical textbooks that you cannot control the autonomic. It is autonomic and automatic and that's part of how it was named. And you don't want to control your heart rate and your blood pressure and all that because you want your system to regulate it.

And that's true to an extent. And yet it does seem that in chronic illness there are things that become out of balance and that includes and is reflected by heart rate variability that's lower. And we know that that's associated with depression and anxiety and it's associated with a whole host of chronic diseases and then hire more regulated heart rate variability.

The higher numbers typically better with that. There's this reduction in many of these disease chances when they look on average for people with higher heart rate variability.

They're healthier and they're happier as it's a correlated marker with that. And then the C. 02 that you brought up that carbon dioxide level, which is I think underappreciated. But there's this sense of how carbon dioxide, which is, you know, everyone talks about oxygen. Not many people are talking about carbon dioxide, but the carbon dioxide actually has these properties which are help with as a dilation hell With regulating blood pressure. Help with nitric oxide production through the bore effect. Help get that oxygen out of the blood into the tissues where it needs to be delivered. So there are many aspects of carbon dioxide that are so important and many people don't even know anything about where their carbon dioxide level is. They don't know when they're stressed, where their heart rate variability goes to. So I love this 14 minute quit the body, put the physiology put the mind under stress and see where that person's physiology is responding. Because to me, one of the most important things that we could do for our health is to train the physiology to win, getting a stressful input to relax and to to be able to think clearly and to maintain a sense of calm, loving stability. I remember the moment when I got the call from someone at my family's church saying that something had happened.

My father was in the hospital and and he had passed on suddenly and my whole system froze. And to me that response was something that I really started to become curious about.

I don't I I want my body to respond without me having to think too much about it. I want the autonomic response, the immediate response to be something that is relaxed and and part of when I do cold training now is I'm putting my body under acute physiologic stress by going into very cold water with the intention of okay, I'm training relaxation in response to this very acute physiologic stress and that that's what I want out of life. So what do you guys do?

How do you help? I know there's neuromodulation and there are other tools and their breath work practices.

Breathwork, heart rate variability, and regulation

So you've done this stressed as someone is showing some signs of some opportunity to become better in their heart rate variability and their dilation and many of the other assessments that you've done, The Q E. G. Shows opportunity for improvement.

What kinds of techniques and practices and therapeutic interventions do you tend to use? – [M] A combination. But first and foremost we work with the physiology in a prescriptive way to restore the natural signals of the body.

So the breathing reflex, you know, we we take such control of our breathing, we pull in the air and we push it out and and it's so amazing that hipaa cap Niya or over breathing uh in an example of that is when you're in yoga and and the instructor says, take a deep breath and let it out, right? We're basically sending out all of the carbon dioxide that is actually needed to deliver the oxygen molecules off the hemoglobin. And we feel lightheaded and we feel altered and we say wow this is so amazing. It's actually depleting the system, right? And so if the system, if the chemo receptors are sensitive, it stays in a loop where it's almost begging for, I call it air hunger, right? It's begging for more oxygen.

But that isn't really the issue. So what we do is we we teach diaphragmatic breathing and it's, you know, it's low so it's in in the belly. Um and it's slow. So there's a resonance frequency breathing rate, generally five breaths per minute for all humans.

It's 4-7, but five is a really good um is a really good number and it's basically five seconds in five seconds out and it's a low volume. And this is this is the most important thing because what we see the most is issues with carbon dioxide and oxygen delivery.

And so if if we think of the amount of volume we take in like a two liter soda, if we're really filling everything up are the sympathetic nervous system receptors are up in the upper lungs.

And so if we take too much volume in breathing the chest or the shoulders. Now all of that C. 02 comes out so we're deficient. So we say what if you had like a red bull can or or some tiny little volume of air that is gently brought into the body and then effortlessly leaves the body.

And so in that way we're keeping the C. 02 in. You know of course the oxygen is plentifully available, we don't have to be concerned about that. Um But it resets the system to go oh this is what right breathing feels like in the system. It's it's a calm, it's more considered peaceful inside. It decreases anxiety.

Uh There's definitely no panic happening when you have this type of breathing. And so prescriptive breath until the individual automatically creates that as its baseline state. Sometimes that's two weeks, sometimes it's two months. Um But that's our first and foremost and and also we do meditative practices. Um We talk a lot about mindset and and what is our perception of, you know, all of it.

Life longevity, health, well being, love, connected. Yeah. Quality of life is is one of our biggest indicators of where an individual is and it's our goal to ensure that they move along that spectrum to improve their quality of life because all things look better when you're happy and healthy, – [D] It's funny, people will come in and they'll say I've never been to a doctor's office that asked me if I was in touch with my creativity or some of the questions that we asked are driven to really understand what their quality of life is indicating you know going back to the breath piece though.

You know when they have people that are in a panic attack and they haven't breathe into a paper bag. The idea behind that is so they breathe higher concentrations of C. 02 to bring their C.

02 up there. We see a lot of people doing breath work and they're like oh my fingers are tingling. It's really working well what it's doing is it's blowing off all your C. 02. You're verging on a anxiety state and you're constricting your

blood vessels so your fingers start to tingle.

It's uh but it's associated with oh it's working. I'm like no I wouldn't do that one. – Yeah. Yeah. I mean there's definitely interesting associations with oxygen and CO.

Two and breath work and many misconceptions about it and they're very different styles of breathwork and some may intentionally be sympathetic. Activators for reasons of hore medic kind of a controlled stress response.

And and and yet when it comes to what's the default where should people be most of the time you don't want to be sympathetic most of the time if that's used for a hermetic stress activation and they controlled practice that's one thing but if it's used all the time and there's this sense that people tend to over breathe and it goes with our culture our culture wants to overdo things and wants to go go go do do do and too slow.

Yeah to slow down the breathing. It it seems counter intuitive to a lot of people. And I find that to be really really the case for many many chronic diseases where people tend to have this low C.

02 tolerance and they tend to have this habituation into over breathing that does lead to chronic depleted co. Two levels that can dis regulate many aspects of the nervous system and the drug oxide and blood pressure regulation and many other things that can become bigger issues for the brain and the body and chronic disease over time it's a self perpetuating things. So that's very important.

Get people retrained on how to breathe healthfully in a way that keeps the nervous system regulated on the day to day. And then you mentioned mindset and nutrition and other things as well.

Um and and asking those questions body and mind both. And that brings me to, we're talking about the consciousness we brought at the beginning and and I want to bring that back in now. How does consciousness and the evolution of consciousness and the changes in consciousness relate to this optimization and aging brain conversation. Where would you say that fits him?

– [D] It's hard to really say optimization of consciousness because consciousness is consciousness it's what it is with and it's what you experience. Uh there's ways to experience greater access to it um Is probably the best way to put it and it's still not doing it justice. Um But we've added aspects to our evaluations where we're we're assessing the stage of development of consciousness that an individual has.

Um And it's it's not a hierarchy or anything like that. But it's it's a way that we can see to interact with the person the way they interact with the world. And um it can it can help us to guide interventions or actually help to guide them into states of more awareness of that that developmental uh higher developmental stage of consciousness.

I don't like to call it higher because it makes it a hierarchy. But it's just another level that they can experience. – [M] Its perception on a on a larger scale. – Yeah, expanding perception.

That's a nice way to put it. – [M] We look at we look at mainly, well we look at it across the board but from the health consciousness perspective. So in 2015 we developed a health consciousness scale that looks at, you know, eight different parameters of life.

And and what it gives us a clue into is what strategies is the individual using in their life that shows their level of awareness around the things that promote greater health and well being.

And and so one of them might be in the environment. And you know, we look at are they using HEPA filters and Berkey filters for their water And um you know, are they are they using, you know, botanically based dental care product?

What is the what is the tactical actions in life showing us about how they're walking through the world with their with their awareness on the things that can impact health and well being.

And you know what we what we've been able to to find is we it's sort of an unbalanced state, a growth opportunity state and then an optimized state. So the person who is super aware of what this human system requires to thrive is going to be optimized. Right?

And and the others right? There's certainly room for improvement everywhere. And so it just really helps us get to how they're living their lives and um and then put in what we call precision education um for for how they're actually living instead of oh here all the things you can do to x. Well they're already doing half or more of those. Right?

And so it it creates efficiencies in the interaction with the clients so that they they can understand that they've been like we actually know who they are and we can guide them precisely because of that knowledge. Um I think that from a practical tool is the amazing part but we also tie the data to consciousness and I'll just give one example if if I am a person who is over breathing hipaa kapnick and I get triggered by some stressful thing and I go into a greater increased breath rate right? It gets worse and worse.

My ability to access my prefrontal cortex and my executive skills, which is where I am rational and I can take action from a rational place um is not at all accessible. Great. What happens is I'm I'm now in survival mode and the idea of me being rational or telling somebody telling me to take a deep breath and calm down not happening right? So basically my consciousness that I normally carry is going to go offline. I'm going to be reactionary, bite your head off, pass out, do right, do something that isn't my normal consciousness.

And so that's what we mean when we say, you know, we leave consciousness based on the triggers as they hit the system and then how our system responds or reacts to those triggers.

Consciousness, ketamine, and nervous system reprogramming

Uh and so in in people recognizing how the physiology and the breath modulates the conscious experience in day to day life, they're able to have a greater awareness of, oh, I've left consciousness, let me use my breath to recenter my system to allow the the executive centers to come back online and now somebody can talk to me because I'm actually able to comprehend what they're saying to me.

– Yeah, that's so important. People tend to be unavailable for rational conversation in a mode of being triggered and that's almost like a almost like a developmental regression in a sense or a shadow, crash into the inaccessibility of the level of normal responsiveness and cognitive development that a person has achieved and worked hard to achieve in their life of being able to regulate and manage their emotional experience and their responses to people and how they're interacting and engaging in a loving kind way, something as simple as breath dis regulation and nervous system dis regulation can push a person out of the available normal tools that are accessible to them when they have that blood flow to the prefrontal cortex and the executive function online.

So these are really important tools and assessments to where you're essentially having this quality of life assessment, you're having an assessment around where people are at.

So if they've already done all the work around sleep hygiene, you're not like spending a lot of time talking about sleep hygiene with them. But you're you're finding those leverage points. You're finding the points where someone may be doing all the right things, diet sleep stress, but the environmental stuff, maybe they are exposing them on themselves too. Water that's not filtered and microplastics in that water that are dis regulating the hormone system.

And these are often unfortunately hard to assess foreign missed areas of where people do really need to go if they are looking for optimization of brain function and of their life and their health and their happiness. So I love that you have this this comprehensive approach, how about ketamine and and and I know it's like when we're talking about consciousness. Sometimes the structures of the sense of self can get rigidly locked in. And there are some tools that I know that that that you guys are experienced with utilizing in order to help break free of some of that rigidity and to help people to be able to flex themselves into being ready for shifts and changes and their consciousness as well as the physiologic shifts.

How does ketamine or other aspects of how you help people deal with those significant shifts in their structures of

self? – [D] Well, just even in our neuromodulation training, So in neuromodulation we use a combination so we have them breathing with the breath pacer while they're getting stimulated with the neuro modulation. Um that seems to get the brain in a state that is just so receptive to new patterns. Um But we've also, what we do is we we have them do a couple of sprays of ketamine nasal spray right before they start. Well, ketamine has got the ability to increase neural plasticity, the ability to build new connections in the brain and it uh it disrupts the default mode network, which people get locked into into this uh the default mode state is a good state, but there's times that patterns get woven into it that you have trouble getting out of. And some of these can be anxiety or depression patterns and that's why, you know, medications are not usually that effective in those situations they call it uh resistant depression.

Um but the ketamine works wonders on it. I mean the way it opens the brain up to, it's almost like a reset button, you know, on the computer when you've got all this stuff that's just causing it to crash and you just powered off power back on and all of a sudden it's all clean again. Uh ketamine seems to work really well in that way. Um interesting too, since this is the the microbes uh summit read recently how ketamine actually has positive antimicrobial effects in the body. Uh one that was even more interesting was that it actually killed off spiral Keats. Um specifically the Lyme disease creating the bug before I can't even pronounce it.

Yeah. Okay. Thank you. Uh we don't see many many of those in our clinic. But uh yeah, but I was I was fascinated by the fact that it actually changes the microbiome.

– [M] Well, you know, the um what's interesting, we also use oxytocin, right? So we pair oxytocin and ketamine spray with the neuromodulation and the nervous system training and you know, um I feel like we we started this in a in a new space and I can only speak to the perceptions of what we believe to be occurring.

Um the oxytocin works, you know, on the heart to create a semi like a little more trust and a little more trusting. I'm a little more relaxed. The ketamine seems to slip the subconscious veil aside and these are raped just simply my perceptions. And as they're working with the prescriptive nature of the human system, their breathing, which, which is generally up here, rate goes down, diaphragmatic breathing. The system says, I'm safe. They know they're sitting in a room where they have a coach and they're and they're doing this prescriptive breathing and a memory will come up about being bullied in childhood. Come up with the feelings of being bullied in childhood and we can see it on the data. And so we see, you know, note what's happening. Refocus on, right? The mechanics and what happens.

It's anywhere from almost immediate rebalancing of the systems that have started to go out of line to panic attack. And when the panic attack comes, the individual knows the power that they have. The coaches walking them through the panic attack, the panic attack resolves and they have this epiphany that says, oh my gosh, I actually have control over my panic attack.

And generally what happens is they walk themselves out of the panic attack before it occurs. Right? And so, um, you know, so many things happening in the mind space or in the psyche space with the ketamine relaxation, you know, dropping of tension, reap respecting even to the place of seeing the experiences in a complex systems way and how they were created over time by lifetime patterns and habits.

Uh, and so, and that's what this teeny tiny input. Uh, and then, and then you know as people are able to regulate this human system we also look at the personality patterns Kessler Kessler's work and we're seeing different responses of larger ketamine doses, you know for therapeutic use depending on the personality pattern that they've adopted in childhood for survival.

And and there are groups that are not ideal to work in ketamine until what I just referred to as this body mind complex being super strong. Um And and so it's interesting because we're getting insights into genetically and also physiologically but energetically now into who will benefit from uh certain therapeutics with ketamine.

– Yeah and that's that's so helpful to have this capacity to help people understand their own inner capacity to self regulate. And even if it utilizes some inputs like a little bit Academy and oxytocin which are inputs which are helping to give them the realization that they can self regulate, it's not that they're relying on that in the future, as you're

mentioning, they once they resolve and regulate they realize that oh I did that and I can do that again. And once people have had that realization one time it's almost like it goes into cellular memory and people just have that capacity from then moving forward and it's I think of it sometimes like a re imprinting of the way of relating to an experience. Like there's a new imprint on on the capacity of how I can relate to this experience because in the past it's always been like this, this, this, this this and I just don't feel like I have any control because it's always been that way. But now a new input comes in and there's this redefining of that wait a second. Actually, I don't have to have that same way of responding. I have this coach, I have these inputs, I have this support network and now I have the resources to handle this differently and with those resources to handle it differently. It re imprints the default for how to handle it next time. And I think this is incredibly important for how people regulate their nervous system and regulation of the nervous system is I think a fundamental part of how to build resiliency and health for the long run.

And I believe that if we do get more studies on looking at DNA aging and brain aging, that will see that those who have trained in and understand how to and are regularly regulating their nervous system, I expect that to make a big difference in how people are aging and how the brain is functioning so in relation to all of this, where where might be some additional these are these are like very practical things that people are are are doing in order to to regulate their physiology.

What are some of the I know that you're also very well versed these kind of almost up and coming. Very innovative things like peptides and things that are other things that people can do to really go towards the extra mile of optimization of adding in some inputs through advanced supplementation and prescriptions that are looking to help the physiology to be signaled to do optimization. So can you speak a little bit to that side as well here? – [D] Yeah, I mean that's it's very individualized depending on you know what the person's goals are, what their I mean what their desires are just like diet. I mean, you know, we have some people that want to be vegan and others that want to be carnivore and everybody everybody in between.

Advanced rejuvenation therapies and future possibilities

So, you know, we tailor most of the interventions to that peptides are working across the board with things from sleep to muscle to bone to um uh to healing, to increased cognitive performance, all of that.

So there's a wide variety of peptides that can be used. Um We used a lot of technology um And more recently we've we've added a for Asus treatments where we can take off a leader of a person's plasma and replace it with saline and volume and and what they're finding is that in older individuals you do this um I'm talking to people over 40, you do this and it removes all of the signals of aging that the body is creating.

It removes the um inflammatory markers from the system and people get a rejuvenating effect from it. And in fact some of the biologic age tests have shown 5 to 7 year age reversal, six months after having the procedure done.

Um We're also in a study where we're using young plasma, where we take off that leader of plasma and we infuse plasma from an 18 to 25 year old student and, – [M] Well screened. – [D] Well screened.

Um But there were still in the early stages of it. Some of the early university studies were super positive with the outcomes, especially in neurodegenerative diseases. So we're doing some confirmatory, larger scale work with that.

I mean there's and you know, you look at the horizon right now um since we're on the on on poop, we'll talk about that. Getting um young uh stool transplant, fecal transplants is rejuvenating the body substantially.

In fact there's a company now that is having you bank your stool while you're young so that you can actually get a fecal transplant from yourself later on in life.

Um it's just it's crazy what they're looking at. And we're in this era of um what we call cellular reprogramming, which is probably the most exciting area for me because they're actually reverse aging different aspects. They're able to regrow hair cells in the ear from from age aging and hearing lost. They're able to rejuvenate the skin by 30 years.

This is getting ready to leave the lab and go into trials But it reversed the age of the skin by 30 years. They can do it with the liver. Um, you know, the next big targets the heart. So, you know, I think we're we're at this point of the singularity with all of this stuff and you know, we live long enough, we'll be able to take advantage of it.

It's just we've got to hasten it along and uh and slow our aging a little bit in the process to get there. – Yeah. And I think there's real promise also with, with Lyme disease and and plasmapheresis, there's been some actual data looking at that and and and you remove these inflammatory inputs and and and the whole system regulates and calms down. It's really amazing to be able to see that happen. I think that's an up and coming and the cellular programing is amazing as well. I think there's this, this is circling nicely into to where I I think would be a nice place to, to help people to to leave people. Is that there's hope there's hope that not only is there this right now already, these immense capacities to utilize tools and techniques that many people aren't, even though many people may be aware of things like breathwork and breath practices, that there's a whole world to investigate within that.

There's a whole world to investigate within sleep optimization. There's a whole world to investigate within the ability to regulate the nervous system on the fly in, the ability to regulate consciousness and the aspects of creating a robust expression of whatever developmental stage of consciousness that a person is that encourage the development of that consciousness and a healthful trajectory and many aspects related also to actual physiological optimization and longevity with cellular rejuvenation techniques and up and coming technologies that are in the research phases right now that may become available.

What would you like to say to summarize and help to instill hope for people who are struggling, who are maybe having some problems that they haven't found solutions to yet.

What words would you give to them? – [M] Mine is really on the, on the consciousness side, You know, we are so much more than than than we may believe based on our cultural programming on our ancestry, on our belief systems.

And as we recognize the possibility that were way more than a than a one time use vehicle, um there's the ability to become the technology, right? This this exquisite intelligence knows exactly what to do. It's self healing, Self restoring.

It simply requires awareness to be able to give it the right inputs and to kind of pull it, reclaim it, so to speak, from the stressors of life. And so as we, as we maybe consider redefining what we are, we have access to greater and greater levels of wisdom, consciousness expands awareness brightens and we know what to eat and we know and to go to sleep, right? And so so for me, I really advocate being more of our true essence in being self guiding.

– [D] For me, it's just looking at the fact that if you define us by the type of being, we are we are complex adaptive systems and the key word there is adaptive and we adapt based on the environment.

We exist in the air, we breathe the water, we drink the food, we eat. The people, we hang around the system adapts and you know, life is just not worth not experiencing it. You you want to have the experiences in life.

It makes life just so exquisite and having the gratitude for that and and going out and seeing what potentials there are within you. – Yeah, that's so lovely that there's this sense that the essence that I'm getting from the micro that that we have this essence, we have this essence of that's so beautiful and so loving and no matter what the expression of symptoms or the physical form externally might look like or the circumstances that are challenging, that we might find ourselves in that there is this essence that is beautiful.

This essence that is profoundly loving and in touch with our connection to something bigger than just the body.

Hope, presence, and closing remarks

The body is just one part and the thoughts and the emotions are still just small parts of something bigger that we're a part of that we can tune into and touch into and we can find a way to relate to the life challenges and struggles from that essence. And if we can do that, then its beauty is the core and then what comes and love is the core and

then what comes from life is related to from that and the struggles and stressors and challenges are related to from that place. And that's a very different way of living life is compared to living life lost in the mind or the rigid narrowed sense of the body and the struggles and and and and then to your point, that sense that there's also this potential, this sense of so much potential, so much that's possible within consciousness and within the body and that that a lot of it has to do with the input and and and the surroundings and there's adaptability and there's adaptability to being able to see the system almost without a ton of rigid energy and effort to just make some changes in what's around us. The people were with the water, we're drinking the food, we're eating the inputs around us can actually make a big difference in a flourishing of the system. And that to me is pointing to this, this default, that that is a healing mode that is moving towards potential as a default and that it's the stuff that gets in the way of that it's not that we need to achieve something different necessarily. It's that the default is to move towards potential and to heal and to be an expression of our potential and that it's the stuff in life that prevents that. It's not that we need to work so hard to cultivate it in a sense. We need to allow it to occur by having the sense of what is preventing and blocking it and removing to the best that we can that well, maintaining that essence. Also when there are things blocking that we can still find the essence and the love and connect to the beauty even in the presence of an environment that's challenging. So I love these two perspectives and bringing it together is the sense of being and becoming. There's this sense of being with what is as it is beautifully in love and becoming the potential by helping to remove the obstacles to that becoming and allowing it to emerge. And so that's what I'm gathering from this any last any last summarizing thoughts that you have or things you want to leave people with and then of course let them know how to find out about you and your work and and where to go to to learn more.

– [D] I love the way you summarized it. – [M] Right? Right? Yeah. Every for me, every, every moment of existence is such a gift. And as we recognize that we have this moment, it's just an opportunity for us to love and to connect and um that that I think is is for me the very most important thing – [D] Yeah, people could focus on presence. I mean, that's been the biggest gift for us is really understanding presence and and practicing it on a regular basis. Stay out of the past don't plan too much for the future. Just really focus on experiencing the moment.

But if people do want to get in touch with us, um they can get on our website apeironcenter.com. It's A P E I R O and it's a hard word to spell center dot com and and reach out. – Wonderful. Well, thank you both so much for being here. I think this is an important conversation for people to hear and to feel because there's some transmission here happening as well beyond the words. And and so that that feeling of that that presence deep presence thing. So lovely chatting with you and thank you everyone for watching. This has been another episode on microbes and mental health and dr miles take care and have a wonderful day.