Peptides 101 Introduction

Hi. There's our whole tour, and I hope you're enjoying the Peptide Summit. I want to do just a very brief, introduction to peptides and basically the background, the different class of peptides and their mechanisms.

So that when the, speakers are, you know, we're all talking about different peptides, like, you know, what the heck do each of these do? Because sometimes they can, you know, just, reel off a bunch of different names.

It's like, what the heck is that? So I want to go through and put them in classifications for you and understand some of the basic underlying fundamentals of peptides.

So it's called peptides 101. And just a little disclosure here. And then our legal department wants me to say, which is true, I am chief medical officer of Integrated Peptides.

And whatever I say and also the speakers, it's it's our opinions. We're talking from experience and studies and has nothing to do with the, integrated peptides, saying anything.

This is coming from us. And also any studies that are discussed. You know, there's no perfect study, so it could be animal studies, different doses. It's, you know, there's no studies on the actual products that, integrated peptides, has.

So I want you to keep that in mind that we are talking generally it's a educational discussion. Peptides in general. And then these, anything said is, has not been evaluated or reviewed by the FDA.

And it's not, nothing is intended to diagnose, treat or cure any disease. And to the right there is the legalese that, you can read.

What Peptides Are and How They Differ From Hormones

So let's go through what we want to kind of achieve here is understand what the heck is a peptide, and then understand the multiple types of peptides and then and what their targets are to support normal functioning and the core aspects of dysfunctional system as they're involved with aging, poor lifestyle, toxin exposure and and to address symptoms of the multi-system disease and understand how peptides differ from hormones, their mechanism of action.

And understand again, the basic classes we have immune modulating rejuvenating and these are pretty arbitrary, but, you know, sleep brain, you know, basic and in the tropics, antimicrobial, mitochondrial or energy, they have the growth hormone releasing hormones, on the, milana tropic, which are great.

Really anti-inflammatory, then anti-aging, anti-inflammatory and other ones. So they all cross over and they work so well together. But we'll try to make some sense of it and put them in different classes for you.

And understand really the underlying issues of how the heck we get sick and why we age, and how peptides can aid in retarding that. You know, basically progression to, you know, multiple, illnesses, that multi-system illness, becoming frail, you know, autoimmunity, cancer, cardiovascular disease, you know, just basically loss of muscle mass increase, body fat, insulin resistance decline and memory.

You know, basically, your immune system starts declining. And so we'll see some of the things that when you look like, damn, you know, why aren't we addressing those?

When you look at what really changes as we age and we see that so many conditions are associated with, you know, this immune dysfunction, that we find with chronic aging, you know, including stress, allergies, toxin

exposure, lifestyle, certainly mold, obesity, insomnia, sleep apnea, where you get this one t right.

So think of everything as a, a basically a teeter totter. So you got one on one side to the other side. One gets stuck inside the cell cage, you get stuff outside the cell, and usually they're unbalanced.

But as we get older, the one gets too low. So now you can't fight intracellular infections or cancer. But now you have all this inflammation. Right. But also they found that the one goes along with what's called t rag, which is kind of the the, balancing immune system.

And it keeps your immune system from going too far. So that gets messed up or isn't high enough. It kind of puts the brakes on everything. So then you get auto immunity, and then there's on the other side with T too.

So you. Yeah one t rag to t eight 1717 really is that autoimmune inflammatory driven side of the immune system. And as we age with any illness and disease it starts going like this.

So all you have all the states 17 to not enough T1T right.

Major Peptide Classes and Immune Modulation

So we're going to talk about how that snap that back to become younger and and really have a younger immune system which then perpetuates everything healing you know, lack of this degenerative diseases, that we see with aging.

And really, we'll talk about your gut, how the gut is so important, and the gut brain axis. So I just want to, you know, bring up these topics. So when, when they're talked about that you have heard of them before.

So what. That is a peptide. It's basically a protein, but it's arbitrary if it's less than 50 amino acids. So it's amino acids connected. If they're longer than 50, some people say 40 or 50, they're a protein.

If they're less, they're considered a peptide. So they're small proteins. Now how do they differ from hormones? You will say, well, as peptide, a hormone, there are a lot of peptides that, they're called hormones and vitamins that are actually hormones.

But, peptides will generally work on the cell surface. They were quicker. They work what's called, Piotrowski does have cells, signaling, and they signal multiple messengers and have multiple effects.

It's much like a vitamin. So you say what is the vitamin do? It has multiple effects. And actually it's actually much safer. It sounds like, wow, we don't know what it does.

It has so many things. But you know, drugs tend to be very targeted. And that's when you get into problems is that it blocks one thing, but you don't think of all the other things that are basically effects when you're just trying to block one thing.

But the, peptides will generally have multiple effects, and they also work apart genetically and turn on and turn off genes. So when you look at your, genome, people think our genes are what, what's going to happen.

But really, when you do a genetic test, your genes are about 20% of what's going to happen to you. 80% is what affects those genes, but genetically. So, you know, whether it's lifestyle, toxins, pesticides, plastics, exercise, medications, whether they be hormones, peptides, you know, all those things acting on those genes can turn them on or turn them off.

For instance, a peptide may turn off 100 genes and turn on 200 genes. So, when you have, let's say you're, oh my gosh, have and for, Alzheimer's. But if you turn that gene off, then you're fine.

You only have 20% is set in stone, 80% is not so. And then the hormones, in contrast, actually go into the cell, go

into the nucleus, work on nuclear receptors.

Very slow on, slow off. So and they tend to have broader effects and and actually be, you know, more side effects, and not as safe. And some of the peptides you can give a thousand times the normal dose.

And there's no toxic effects, not for all of them, but they're some of them. It's like, you can't do that with water. But, they they are in general, very safe.

And they, they work basically in a different mechanism. They're very synergistic with other peptides, hormones, I don't know, you know, something had any peptide you can't give with, with ex treatment.

So, peptides, we found out, you know, we thought, you know, hormones are the master regulators, but we found that peptides really are regulate almost every process in the body.

And they're very tissue and cellular specific. And they're more precise than hormones. Hormones are kind of like hitting it with a bat. And this is like, you know, with a scalpel.

They general tissue specific effects. While hormones have more broad effects. Again, mentioned extremely safe. And more and more peptides are going in clinical trials.

The drugs coming out or peptide hormones or, peptide. What are they be antibiotics or, you know, basically a big thing now is mitochondrial peptides and, things for diabetes, about 30% now, I think it is or coming out, it'll probably about 50% of new drugs coming out are peptides.

So what are the general categories. Yeah, this is somewhat arbitrary. You can break them down in so many different ways. But let's talk about immune modulator.

We talked about that one Treg the two G17 balance. So thymus and beta four or Tb4 frag. They basically are your kind of even though. So increase t one and lower t h2.

And do both of those. The difference is that, thymus and beta four is a very long for peptides, 43 amino acids. So it has multiple what they call domains that do different things.

And one of the domains actually stimulates mass cells. Now if you give T before to someone who has actually mast cell activation syndrome, too much muscle activation, it will probably help.

Even though it has a domain that's similar. It's mast cells. Because overall the upstream effect modulating the immune system will actually suppress the mast cell activation.

But the T before frag is what the, what it is, it's taken out the part that has all the immune modulating all those good parts and the, rejuvenating effects, but leaves out the part that stimulates mast cells.

It's also much smaller.

Sleep, Brain, and Growth Hormone Peptides

So across the blood brain barrier gets into actually, biofilms, it gets into, you know, very small nooks and crannies in the body and has a much better effect in a lot more places.

BPC 157 is just a it's core treatment body protection compound. It is produced in the gut and it's one one of the few peptides are stable in the gut. Even though it's a longer peptide, it actually absorbs very well and is shown to be equal potent whether you give it orally or subcutaneously or I. M.

or however you you want, you inject it IB it's from the same dose. It has the same effect if you take it orally or systemically. So let's say you have a knee that hurts, that same dose orally in the study show that it will work the

same as if you give it IV.

Now, the you know, if you inject in the joint, it's going to be more compressed in that joint then you don't get a higher level of reduction, inflammation and all that in there.

But in general, it'll be the same as I'd say subcutaneous or oral, the same dose or the same systemic effect. And they shown that for, you know, studies on, models of and, Alzheimer's and, you know, whether it be diabetes and, metabolism, tendons, joints, all those things.

I'm as an alpha one is actually an approved peptide. It's approved as an orphan drug here in the US, but. So you really can't get it. But it's approved in over probably 30 countries for everything from cancer to, basically infections like hepatitis B, things like that.

So it really increases that one. And really so, kills those interstellar infections, 5 million time again or other, I medicines that are produced in the famous gland, which we're going to talk about.

And they all have generally similar effects, but a little difference. You know, some have more, modulating effects, like, for instance, thymus and Alpha one is really on Guan res that, that was a beta for, basically is more even well raised.

One lower two that to age 17. Now 5 million, is kind of like, that was a beta four, but it is more anti-inflammatory, I think, and it's probably one of the best for herbicide reaction, although the other ones work as well.

When you add like, tb4 or t before frag with bc BPC lowering that DHT. And then the, the tb4 and the, the thing that t before and t before frag has over time was in alpha one is more, rejuvenating effects, more growth factors for thymus.

Now for one is more, you know, kind of that boosting that immunity for infection. I put, battalion and pi million, their pineal hormones, and they actually will, stimulate the thymus to make dynamic hormones.

And what's interesting, you can take out the pituitary and give the pineal hormones, and it will stimulate the thyroid. So it will somehow stimulate the TSH receptor when there's no pituitary making TSH.

And it's really, a balancing hormone. One of the best anti-aging hormone. Studies show when you take it, they've done studies, basically people over 65 years old, see different cardiovascular disease follow for, for 14 years, dramatic reduction in mortality, morbidity.

They live longer. They're actually cardiovascular function gets better while the people on standard therapy get worse. And they, basically have dramatically less, cancer, heart attacks.

And they live on. Sleep peptides. Some of these are just a miracle for people against sleep like myself. Is a combination of the a battalion or pioneer alien, which again, the pineal hormones, and the and those are shown to actually just those will raise your melatonin levels for an older person up to youthful levels just by itself.

But they have much more effects than that, that when you have that to delta sleep inducing peptide, which was it sounds like a sleep inducing peptide.

You had that and then like a growth hormone secreted on that increases growth hormone or a OD which anti obesity drug. But it's a fragment, a growth hormone.

It really resets that sleep the whole system. Or you can actually get deep sleep that deep wake sleep. So the the, the delta sleep, inducing peptide, it's not like a sleep med where you fall asleep.

It changes over time. Takes a couple weeks, but it kind of resets that where you can actually get sleep. We find that combination of those three, the, the basic pineal form, peptides, the Italian Pavillion delta sleep inducing

peptide and either, growth hormone secreted god or AMD or growth hormone.

And you get great sleep or see if it improves sleep with deep wave sleep after a couple of weeks. So there's a lot of, you know, talk about, you know, all the growth hormone secreted, gorgeous growth hormone releasing hormones growth are releasing peptides.

It shows they work better together. It's very complicated. I won't go into that. But just so you know that, and the problem is people start associating that with like, bodybuilders and things like that, but you can't overdose because if you take too much, it doesn't basically raise your growth hormone more than it should.

Excuse me. And then OD is a fraction of growth hormone. It does not increase, IGF one, which is how, most of the effects of growth hormone, but it has its own rejuvenating effects and also does boost metabolism.

So hence anti-obesity drug brain peptides, Cmax and see like, those are shown to improve memory attention ADHD, OCD, they increase brain connections. And all these have almost no side effects.

I have never heard of any, even healthy people that improve, you know, test scores and things like that. Let's trivialize. And it's been around for, 40 years.

It's basically based on, poor brain peptides, combination.

Antimicrobial, Rejuvenating, and Mitochondrial Peptides

And, and it's been given IV for a long time, but now the FDA says you can't do it because it's now called it's a biologic, so you can't give it, IV but or as an injection, but it does absorb orally.

And the studies show that and it's shown to help with, traumatic brain injury however that improve memory autism, and increase brain connections, protect the brain from toxins and so many great things with, through Eisen.

And there's a long history of safety and efficacy. They hexa is a, angiotensin, two, seven and long. Basically that, is shown to improve Alzheimer's. And and memory, cordage in that their brain neurotrophic increases brain metabolism and all these are very synergistic, with for instance, TV4 TV for Frag and BPC are sure to protect the brain from traumatic brain injury, increased memory, and I know when we give people BPC and TB for link that I can think clear or that's what they say.

A lot of times. The growth amounts great to dogs. Yeah. We can spend a lot of time on this. But essentially no there's go through releasing peptides and go through all releasing hormones.

And they're shown to work better when they are used together. And then the anti obesity drug which is a frightening, growth hormone. And again both these peptides are naturally produced.

But some are synthetic and some are drugs for instance like thymus and alpha one is approved as a drug. Antimicrobial peptides L 37 is a big one for a broad range of antimicrobial properties that your body secretes.

Actually, stem cells secrete them. It also stimulates stem cells. So again, it's a good vicious cycle. Thymus and alpha one is, approved for infections.

That raises that one. Thymus and beta for anti before frag. Also BPC 157 all those studies have shown that it it's very I haven't seen any studies on bacteria.

But every study on viruses shows like for instance, it outperformed a cycle over here at one 100. The dose. So it killed the herpes virus. Better than they cycle at one one half the dose.

But there's not that many studies on other things. So, we find that it really helps a lot of infections, but there's no studies to really back that up.

And extremely safe, and rejuvenating again will bring in a lot of these, peptides. BBC 157 increases healing. Why don't give lectures on it and show all the studies.

It's kind of embarrassing. It's like snake oil. I'll get it. Help everything for everything from Alzheimer's, joint pain, autoimmune disease, skin problems, any inflammation.

Just so many things. And the tb4 lab before frag again, I mean, modulation, the a battalion and a pineal gland again will stimulate the famous. But also has, even, higher upstream effects, for instance, working on the pain centers and the, sleep center.

Delta sleep does, like what it says is, sleep center, but it's very anti-inflammatory. So one of the things that it likely does is lower the inflammation in the hypothalamus.

And that really helps you get deep sleep. So all these people with Lyme and chronic infections, they have inflammation. The hypothalamus and they can't sleep.

They're just wired. So it is great at lowering inflammation there as is the Atlantic cordons which we'll talk about especially KTV which can actually get in there, the growth hormone releasing hormones, growth releasing peptides will actually do the same.

Mitochondrial peptides are so many studies, now, in trials with boosting mitochondrial function because it is a core cause of aging, your cells don't have enough energy.

Their immune system doesn't have enough energy to fight infections, to fight cancer. And actually it's called, autophagy, where these are called senescent cells.

They just kind of sit there and they're dysfunctional and they start the mitochondria get dysfunctional, and they start secreting all this reactive oxygen species, a lot of oxidative substances.

And, so become, you know, very know, attacking the body with these, all these oxidative compounds and, but boosting the mitochondria actually reverses that.

So, for instance, there are also any chronic illness, especially lots of studies on Alzheimer's, Parkinson's, even, you know, in terms of, muscle strength, that you want mitochondrial function, you need energy for all these things to work.

So there's moxie, which actually uses injection twice a week or so. Five amino one in Q, which we've had really interesting success with, with, you know, kind of psychiatric, issues such as OCD, A. D. D., depression.

For instance, we had, one patient who was pulling out young girl, all her eyebrows. And after three days on five minute one MQ, she stopped and, human in which is has some amazing things going on with it and lots of clinical trials.

Where for diabetes it all these other kinds of things also boost metabolism. Your metabolism drops as you get older. So, you know, type two diabetes, obesity, you know, basically there's not enough energy for all these systems to work.

SS 31 is and tons of trials. It improves mitochondria is basically an antioxidant inside the mitochondria. For right now, it's very expensive to get the dose that works.

But a lot of great studies coming out on that BPC and CB4, and TB for frag being smaller gets into the mitochondria. Those are also mitochondrial boosters.

And you'll see a boost in mitochondria, that the melanin tropic peptides. The basis is alpha one as I said morning hormone. So you can think of that as your increase melanocytes.

Right. So basically getting, tan response to the sun. But they're also very anti-inflammatory. And you'll find a lot of people, you know, they just love laying out or getting the tanning beds because it just makes them feel good.

And that's what we find is that it's very anti-inflammatory boosts, you know, serotonin and dopamine. And these you can't really give, alpha monocytes so many hormones breaks down very quickly.

And there's 1 in 10, one and then two, which is, which is available. You get ten, you lose weight, increase libido, increase erectile function. So it's kind of called the Barbie doll or the can can doll peptide.

But the problem is if you're young that's great. You get tan. But if you're older, it will bring out dark spots. In that. So now CP is a tiny tri peptide fraction of alpha less stimulating hormone.

It has more anti-inflammatory effects actually, than the whole peptide, but it actually does not stimulate, the bladder side. So you don't get the dark in the skin, which is good.

Plus it's small, so can absorb orally and cross the blood brain barrier. And we're having great results with that for mast cells, for autoimmune disease.

PD 141 is approved for libido. In women. It just got approved. It it's an interesting, peptide. I don't know if I've ever seen it not work. It's a little strange, though.

There's a side effect of nausea, which does tend to go away. But for rectal function. Yeah, nothing beats it. And then, you know, some libido improvement.

Melanocortin, Libido, and Immune Dysregulation

And again, it's approved for increasing libido and women, side effects of nausea. You can get a local reaction. And it's interesting, when I was very sick and I would inject the peptides, I get this red mark, which looks like I was allergic to them.

But as I got better, it went away. So really, was that abnormal? Male 2817 that would basically react. But once a balanced by immune system, I could do the hormones.

You see that with, the growth hormone releasing peptides. And you'll see it looks like, that you're allergic to them, but we see that really in the people, a line patients, the, serious patients that have really abnormal and normally balanced immune system.

Those are also the people that do not do well with vaccines and get harm with vaccine. So, we are starting a, you know, a vaccine in, a risk mitigation program where we test and then modulate that immune system.

So you're less likely to get any problems from vaccines. I'm not an anti-vaxxer. Vaccines have done more for for humanity than so many things. And they're, a huge part of health and why we're here.

But they we need to talk about them just like every other drug. Hey, what's a good what's about, what's the best way to take them? Have you lower your risk from, vaccine injury?

People want to pretend, of they're totally safe. 100% safe, which is ridiculous. I've seen people's lives. They've got a flu shot, and they're totally healthy, and they're bedbound, and they're never the same, you know? So.

But that's not a small, very small percentage. But it happens. Doesn't mean, you know, each person's decide whether or not to take each particular. So if you're a vaccine so you're preventing very serious illnesses.

But some studies show you a 30% increase in, immune disease, obesity. So you're, you're trading off those side effects for something that's really bad.

So where is that point where you say yes or no? And it's I think it's different for different people. So again, I'm not saying, you know, vaccines are they're a good thing for a lot of people, a lot of good.

But we may be giving way too many for this. Why are we giving hepatitis B vaccines to a newborn? Are they going to start doing drugs and being a prostitute, you know, when they're born?

I mean, it's crazy and showed a developmental delay in that. So, you know, it's everything in moderation. And, and you know, what's the safest way to do the vaccines is the question, and so about immune dysregulation.

So, so many things associated with immune dysregulation, chronic infections. And that's what we see so much of against Lyme, parasites. And you look at chronic fatigue syndrome by marriage.

Sears mast cell activation syndrome. They're just immune systems are just way off. So we can look at someone's immune system and really know exactly how sick they are and the extent of their symptoms.

To a very high degree of accuracy. Stress. You've lectures on stress. Stress is thought to lower the immunity, does not it modulates it. It increases inflammation that leads to but lowers that one.

Aging, is big problem. We just keep going like this. Dysbiosis. It's a vicious cycle. And he got issues. Cardiovascular disease, high cholesterol, post-traumatic stress.

They may have leaky brain, leaky gut, PMS, even. It's a resistance and diabetes. They all have immune dysfunction. They all have low thyroid even though they have normal levels.

Obesity is me. They have, you know, immune dysfunction. They all have low thyroid and most have autoimmune thyroid that's not detected on standard tests.

Depression, just dieting, dieting will wreck your immune system and actually lower your thyroid. We do seriously diet. And then when you start eating normally, your metabolism does not go back to normal.

Here. So people say they wreck their metabolism. They have unless you do something about it. Neurodegenerative diseases. Definitely migraines, inflammation, cancer, traumatic brain injury immediately just messes up the immune system.

All those years of aging, infertility. If people can't get pregnant, fix their immune system, give them some T3, oftentimes some heparin. They have immune activation of coagulation, and they get pregnant naturally.

And again, that, abnormal immune system causes low thyroid, that's not detected on our blood tests. So I spent about four hours doing these, teeter totter graphs here so we can gaze at those for a second.

So. Yeah. What's going on? So the thymus sometimes is here on your breastbone and basically about at age 15, you get a sharp decline in the five minutes.

It just starts in ballooning just starts shriveling up. So you get that basically it controls your H2. So you start getting this and you start aging, much quicker.

And then so here is the graph I think you can see my cursor where right around, you know, age 15, 14, 15. You just get this big drop in the famous and you just get this.

And so, when disease, cancer, degenerative diseases, dirty germ diseases, you start happy when you get older people. Yeah. So when you get to your 40s, like, oh my gosh, I'm getting all the stuff.

And especially at 50, you got a couple of years of bad immune system. That's when all the bad stuff starts happening. Now, according to the centers for Disease Control, the CDC, approximately 80% of Aids individuals are afflicted with at least one chronic disease.

As a result, the decline in a pandemic related immune function. So again, CDC 80%, the just the famous abnormality, people suffer from at least one disease from that, and what actually speeds it up obesity, calorie intake, toxins.

So, the make it the pineal gland, an age. So. Okay, many things have, negative effects, and then the subsequent immunity, age, genetics, information, lifestyles, huge toxins, pesticides, plastics, pregnancy, more time to pregnant, hypothyroidism, low growth hormone, zinc deficiency.

You hear a lot about zinc, but the whole Covid thing, and then immune dysfunction, can worsen and also be associated with thyroid dysfunction that's not picked up on stand or blood test.

You're much more susceptible to infections. Toxins are a big issue. Mold, toxins and mycotoxins, plastics, pesticides. We're just bombarded with all this stuff.

Emfs. Don't get me started. All that. So you get autoimmune disease. So this is basically that gets to your body, starts attacking itself. Increased cancer risk, depression, bipolar, obesity with all that information.

So inflammation, hypothalamus, you basically your brain doesn't, you know, basically you're when you gain weight, you increase leptin left, you just go back to the brain until the brain.

Hey, we got stored energy. We don't we don't need to eat any. You know, we started eating. We need to increase metabolism, all that. But the brain doesn't see it. So the brain thinks the body's starving.

So it lowers your thyroid, increase your appetite, lowers your metabolism, and tells the body store fat. So inflammation, the brain does that. And PCOS, gut dysbiosis.

We get in all the chronic fatigue syndrome five maladies. Musculoskeletal degeneration. People come frail, these become weak and frail, and they break a hip.

And that's how they end up with pneumonia or whatever in the nursing home, dirty gym diseases. And, and they have terrible, immune system, terrible mitochondrial function.

And they're all infected. It just infections, these low lying infectious that no one tests for is speeding up aging so much. And it's so common. Stress again we talk about stress.

So, you look at stress is not lower immunity.

Thymus, Gut-Brain Axis, and Aging Summary

It modulates it. And you get, actually the cortisol cortical, cortical drop releasing hormone, which is easy to make. Cortisol hugely stimulates mast cells.

So stress increases inflammation, increases mast cells. So you want to and all these you know there's all these amazingly smart geeks that just are in the mast cell activation syndrome, which no one else will touch.

And but they're still just, focused on direct suppression mast cells. But you really want to look upstream, and that's where you get the best effects.

So especially the people with Sia's, mast cell activation syndrome, chronic fatigue syndrome, Lyme, and restoring that, looking at that one t rag to get 17 balance is much more beneficial than trying to suppress the mast cells with and a histamines and those things they work they help.

But you can do much more. And there was a misnomer. You'll if you read you'll see there's one other immunity and for instance, type one diabetes, multiple sclerosis, Hashimoto's.

It's got to be type one work graves, type two. But, you know, and I was taught that I'm like, well, why do they respond to the same treatments, you know, like even this low dose attract zone, modest immune system, type one or type two, wouldn't it be different.

Or they found is that it was not a huge one was actually it looks like TH1, but there's actually a subset called age 17 which actually is more on the aged, two side.

So that whole T one, autoimmunity is completely in the wrong. It's a T 70 and one actually suppresses T 70. So thymus ends again, that in volutes and you start secreting timers.

And that's when your immune system goes awry and you start feeling the effects of aging. And you lose all that healing, restoring properties required to maintain normal antimicrobial activity, mitochondrial function, and, thymus works and so many different ways to a secondary messenger, for healing.

It's anti-inflammatory again, but that's fine. Mr.. Just up here with so much inflammation, nitric oxide, which dilates the vessels, antioxidants boost stem cells.

The thymus is needed to maintain healthy gastric because, also, you know, people have brain on fire now or super stress. They can't sleep. They got A. D. D., they have depression.

It's brain inflammation. So it's that immune system that too is activating the microglia in the brain. So modulate that that brain inflammation goes away.

It also binds and blocks the effects of toxins, such as mycotoxins. So people with mold toxicity and MPs actually, make it worse that actually speed the growth of mold, by the way.

And the, electromagnetic fields are actually very activating the brain and the microglia. So it's like you don't get deep sleep, when you're around EMF, so recommend you turn off your Wi-Fi at night, boost natural killer cell function, which is that one?

Also stonemasons, especially the small ones like and beta for frog gets into the biofilms and bust some up. So get brain access to think of it as a is basically a two way street.

We're finding so many things that gut controls so many, aspects of our health. You know, we've evolved with these organisms for millions of years, and we can't live without them.

And we find when that gets messed up, it messes up the health of the body. But also when the you have an unhealthy body, it messes up the gut. So you know, they've done, you know, the studies where, then people have, a certain set of, bacteria in their gut and obese people have different said if you replace them, then the skinny people get fat and the fat people get skinny, but they tend to go back to where they were because of the dual aspect, where the unhealthy body actually also controls what bugs are growing in the gut.

So it's much more complex than, hey, just take these probiotics. And then when you get into the viral microbiome, there's, you know, we have more bacterial DNA than we do human DNA, and we have way more viral DNA than we have bacterial DNA.

So the viruses that actually they're called, bacteriophages, they're very specific to the bacteria. They don't harm us, but they go out to the bacteria.

But they'll actually have a major part of controlling the level of the different bacteria in the gut. And it's a whole new, you know, we think, like this whole new revolution of the microbiome.

Just wait till we start learning about the viral, it's one of those things. But you, the more you know, the more you know, you don't know. But, you know, if you're a leaky gut.

So leaky gut is such a problem with all processed foods, all the information, you know, the, maybe the peptides, BBC, the thymus, and, we'll fix the tight junctions.

And one of the best things to heal the gut. Remember, it's a two way street. And just show us you're really a big part. But the vagus nerve, it affects, you know, they say gut brain axis, but it's really gut everything axis because it works at really all levels.

But the brain will affect everything else, but it just inflammation of inflammation of the gut. You have inflammation everywhere else. And so, basically unhealthy gut you're gonna you're going to be unhealthy.

So just in summary, wide range of diseases really have this commonality of this low quality rate, high 817. And a key is, is bringing that back to a youthful, healthy balance.

And remember, the gut brain axis is a core, contributor to overall health. And the peptides can control many aspects of this in, improper functioning or deficiency such as thymus is gone.

I'm not replaced. Five hormones and can really be a major contributor to all these diseases. Aging. So that's it. I hope that gives you a little background.

Sorry for my raspy voice. But when you listen to these talks, so you kind of have a sense of, you know, where where I coming from, with, with the peptides.

So, again, I hope you're enjoying the, summit and hope for finding useful. And, thanks for joining us. All right. Bye.