Introduction and Peptide Summit Welcome

Hi, everybody. Welcome to the Peptide Summit. I'm 100% delighted today because I get to, speak to somebody who I know and respect, but who's also been a mentor for me.

And, I started out my relationship, with, James Lavelle, sitting in the, front of the class looking up to him and having him score me in biology, biochemistry, nutrition, lifestyle and all of essentially the great things.

And so it's been an honor for me to know him. I've been deeply impressed by his training over the years. And, and, and we're both kind of in the, in the business of teaching doctors.

And I think we're going to collaborate a lot closely together and, and, and try to share knowledge. But when it comes to peptide knowledge, I think you're, at the very top of the list of great people in the world.

And so, I'm delighted to get a chance to talk to you, get your insights and wisdom and, and have fun today. Oh. That's great. I'm thrilled to be here.

And, you know, it's interesting. There's a lot of smart people out there that are looking at peptides and, just, you know, obviously with all the work that's going on in pharma, the amount of peptides that are in the market, it's, it's it's a big growth area for, for us to be looking at, you know, it's, pretty exciting, right?

Yeah. That's amazing. But then but what's interesting is and all of these conversations, then, once you realize, oh, I've got all of these arrows that I can use that are kind of therapeutic and interesting.

But then, how do you what is the framework then, that you begin to think about things and how do you choose which arrows to use when? And so that's a that's a big question.

Right. But I mean, I think it's probably the most important question. I mean, I mean I've been doing this work for almost 40 years, you know, seeing, you know, 3 or 400 patients a week in our Ohio Institute and then, you know, still seeing people, now a few days a week.

And I think it's important that you get a alignment of where is the person at, because, you know, you can have a lot of arrows, you know, you can pull out and you can shoot a bunch of really advanced stuff at people.

But if there's not an organizing principle around, what are you trying to accomplish with them? Where's the most disturbed, what I call metabolic roadblocks that are affecting the individual?

Understanding Metaflammation and Inflammatory Aging

And because a lot of times, if I can do the heavy lifting and correct some things, it becomes much easier to get a person back to what I call homeostasis, or that point of what we like to know, you know, is longevity is, hey, is that chemistry and biochemistry operating in its best space so that we're, you know, protecting our cells, protecting the metabolic processes that are that are going on as we're aging?

Or are we just thinking, hey, I'm going to use some, you know, super peptide. It's going to protect my telomeres. And that means I'm going to live forever.

That's where I think people get into trouble. You know, so that's kind of the way I look at it is that, you know, how do we look at that process of meta formation and inflammation, aging, and then what are the tools and characteristics of, you know, the individual?

What tools do we need to apply so that we can begin to, you know, get this person to shift in a direction that's positive. So, what is meta formation?

Yeah. Meta formation. What a great I wish I could have coined that term. You know, I mean, when I wrote the book Metabolic Code, I was talking about meta formation, but, you know, it didn't think enough ahead.

So meta formations in the medical literature as is in phlegm aging. So basically, your body gets exposed to something or, it could be an innate defect.

It could be a genetic predisposition. It could be a stressor, environmental burden. It can be the way you're reading a certain diet. But for some reason, your body triggers an inflammatory response, and that inflammatory response is supposed to heal the event, and then you're supposed to go back to homeostasis or basically your body not being in an inflammatory defense.

That's how your body works. The problem is, is that when you get exposed to things or maybe you're under a lot of stress, or maybe you have nutrient deficiencies or for any number of reasons. Maybe you're just overtraining.

It can even be something like that. Something positive. Right? It doesn't have to be, you're a slug. It could be something that you're you're working out too much.

Your body starts to get stuck in, in inducing too many inflammatory compounds, and that can occur. You know, it's interesting when you think of the work of rec way back in the 1950s and 60s, he talked about this concept of homo toxicology, where the more you triggered inflammation, the deeper and deeper it got into your cells.

And that's what you can think of as meta formation. So the characteristics of meta formation are you first start with dyslipidemia. That can occur because maybe you have, you know, inappropriate insulin response.

Or maybe stress hormones are elevated. You're triggering inflammatory compounds because of an environmental burden. But you start to see bad actor lipids.

The next thing you start to see are shifts in your iron. In ferritin. So basically you upregulate something called hep C and you down regulate something called ferro important.

And why that's important is it's very important needed to make EPO and make new platelets. And so you don't make new red blood cells as well. The next feature of this is that because you're making these inflammatory compounds like interleukin six or TNF alpha, you know, things people have heard about a lot, you know, you're making more of those.

You're insulin receptor that is supposed to be functioning to slowly process glucose into your cell and make 38 packets of ATP has to switch the way it makes energy.

So with metabolic inflammation, you get changes in your lipids, changes in your iron and ferritin composition. You start to become insulin resistant. You start to induce what's called the Warburg effect, where your body's making a lot of lactic acid, a lot of tissue acids within the cell, you're damaging your mitochondria.

You're not making energy the way you should. And then the next step to it. So because this is a process right, where people are moving through time, acquiring and accruing more damage in their cell, then they start to get problems with neuroplasticity and they get oxidative damage to their nervous system in their brain, which then creates issues like short term memory and the kind of systemic neuroinflammation issues that are out there.

And why I think peptides hold a lot of value is just for targeting. That alone. But then probably most important, a couple other things happen, like you start to lose bone mass as well when you trigger chronic inflammation.

But probably the most important is the fact that we start to lose mitochondrial energy production and we lose our energy stores in our cells. And that starts to compromise us.

Not only are we not making energy, but if we do have an insult, like a virus, like what happened with the pandemic, we suck out all that available energy, and now we start to get into a massive inflammatory cytokines response.

So so meta formation is the process of our body unwinding from its point of homeostasis and then moving towards this process of a deeper and deeper rooted metabolic inflammation that's going on, that leads to tissue and cell damage.

And in slam aging or inflammatory aging. I know it's a long winded answer, but that's kind of the process. And that's that is sort of like the that's what we, you and I see in clinic all the time.

And then you see and you're interested. It's interesting because you see people, everybody from the, the teenagers all the way to the people that are in their 80s with that are on some trajectory of that spectrum.

And, you know, it was interesting for me. I grew up in Missoula, Montana, you know, and everybody, you know, walked to school and rode bikes. And so I don't think I, I saw that except in adults when I was in a kid.

Right. But now, now you kind of see it everywhere. Oh, well, absolutely. Because I think the exposures are amplified that the, you know, pesticides are amplified.

Nobody moves anymore. You walk to school, I walked to school or rode a bike. And now, you know, I'm 61 years old. So, you know, back then, I think, you know, I think the bikes, you know, maybe had a steering wheel on them even, it was so the point being is that, you know, it.

I think there's a lot of forces that work against individuals. And like, when I try to get them to understand is if you really want to capture your health, if you really want to move the needle, it's work, you know, but it's obviously worth it.

It's not. And we're peptides. I think help is it gives us an extra shove to get the body to move back into homeostasis. Depending on where that person's at.

Okay. So then now both before we go into peptides, if somebody's somewhere on the spectrum and they this they're like they're listening. They go, you know what?

I think I have 2 or 3 of those things. I'm kind of my hemoglobin A1. C is a little I'm, I kind of type borderline diabetes. I've got high blood pressure.

Right. What are the 3 or 4 things that you that are your go to go go through lifestyle? I modifier 100%. I mean here's some there's I mean before I do anything, what I would call more avant garde, the very first thing I'm doing with people is I'm evaluating their sleep and making sure they've got deep sleep.

And I if they've got a woop, they've got an aura ring or they're tracking their heart rate variability, they're tracking their their sleep pattern. I love that because I can start to leverage.

Well what did you drink? Did you have wine. Did you have alcohol. What did you know what's influencing how you're sleeping. Because sleep super important as we all know.

The other one is getting people to move. And I don't tell people. Oh, yeah, I need you to walk an hour every day. I tell them, can you can you move for ten minutes at one time for me?

I could for a lot of people, getting them to, do a ten minute walk is a big deal. Now, obviously some people can take on more, but I'll start in 10 or 15 minute increments.

I just give me a commitment on what you can do each day, and then I move that commitment up because we know that you're going to get better oxygenation, better neurochemical balance in your brain when you start to move and changes mood and you start feeling value and self esteem.

Incredibly important. The third piece is is trying to clean their diet up and, you know, my father was a world class chef, one of the most decorated chefs in the world, actually.

So I've been around food my whole life. And then I had to learn about how to eat healthy, to go on top of that. So it's really important that people understand.

You know what? No, you're not going to have to restrict every last piece of food you eat. You're not gonna have to be on a modified Fodmap. Gab's gluten free, mono element diet.

Right? Because what I find is that when we and we may need to start people on a low lectin, modified, low carb, low and, you know, an anti-inflammatory diet, right?

We've got to start somewhere with them. But the fact is people have acquired more of this sensitive people didn't have to eat this way 60 years ago. Even 50 years ago.

Lifestyle Foundations: Sleep, Movement, Diet, and Stress

And I and you look around, go to Italy, go to Germany, eat there. People aren't having the problems we're having now. It could be. Yes, it could be pesticides.

It could be the glyphosate. Whatever, whatever you want to put your finger on it and say, oh my God, it's that. It's all the antibiotics, it's all the, the H2 blockers, whatever the.

But in the end, I think stress plays a huge role in it. And so I'm really big on educating people on, making smart selections about food, realizing there's a sliding scale of carbohydrates based on their level of activity, because you work out 45 minutes a day, and the rest of the day you're sitting on your tail.

Don't worry about a pre-workout drink, a post-workout drink, an entire workout drink, and feeding yourself after your workout, which is, you know, I hear this stuff all the time.

It's like, really? You're just working out 45 minutes. You know, they used to plow fields 12 to 14 hours a day on a mile and a half. So, so I'm, I'm big on trying to get people to eat.

Well, I do a lot of intermittent, like, either. I don't want to call it intermittent fasting. I like people time restricting your food like my grandma taught me.

Eat breakfast, eat lunch, eat dinner. You know, try to do them between the hours of seven and seven. And then I obviously am a big fan of, of using the fasting mimic diet kits to help stimulate people's metabolisms.

I mean, you know, I sit on your advisory board, but I'm a huge fan of all the research. And then it gets down to what nutrients do you need to help you out.

So I find a lot of people are stressed out. And so I'm big on supporting people's nervous systems to get them back to being able to make better decisions, because it's very hard to make good decisions about the food you eat.

Am I going to exercise? When you're, you know, you get home at 3:00 and you look at a bag of tortilla chips and you want to hug it, right? Because of the stress hormones are so high.

So I'm big on doing that. I'm big on getting simple things like people's trace nutrient corrected, especially things like magnesium, which are basically void from most people's diets and have a dramatic impact on metaphor formation because it's so intrinsically involved in, you know, cell energy production and regulation.

And that's kind of the those are the big things that I worry about. What people do is, you know, get them eating better, clean up their gut, get them to understand the value of sleep, understand the value of stress, and then start to work from there, you know, are you are you that person that's bloated and tired in the middle of the day and you

feel like you're pushing a thought through jello because you're so, you know, you're you're you're brain is so inefficient and energy production, you know, are you inflamed or you are your joints aching?

Where are you at? What's going on? So then I 100% agree with each and everything that you said, we we do all of that stuff. And, you know, the interesting, we always have this thing.

We say that my goal, my goal for me and Barb every day is that we have the best meal that is cooked in the Bay area. There you go. You know, we're not depriving ourselves where we we're making by talking mushrooms.

We're making morale mushrooms. We're doing incredible savory sort of things. Yes. And so then, so then let's say I just bought that hook, line and sinker and you've got me.

And so now I come and I said, Jim, I want, I'm ready to really do this. And so tell me about peptides, where we're, how would you like me to think about them and where would you where where are we going to start?

Yeah. Great question. First of all, I think, there are some key things where I think peptides hands down made a huge difference in, you know, the way our, our practice works.

A lot of people, who are under a lot of stress because I measure a lot of cortisol on people. Right? Both serum and urinary or salivary. And when you flatten your cortisol curve, without a doubt you're influencing growth hormone production.

And when and as we get older, right. We just we have plenty of growth hormone. We don't release it as much. And a lot of people are arguing over this whole concept of IGF one.

And should it be high and should it be low in the construct of homeostasis? And why I like peptides is I think they help re initiate proper signaling of your hormones and neurochemicals.

So like the, the, the, you know, the growth hormone analogs are secreted. God. So the combinations like EPA, Maryland CJC 1295, Summerland used to be tested in Maryland before they decided, you know, weren't going to be able to get that one.

I like those in individuals. A if they are aging because it it kind of helps in terms of, I think re initiating growth hormone signaling response, improving lean muscle mass.

But I think more importantly, it helps to reinvigorate people who are under allostatic load. So, you know, allostatic load is, you know, basically when your brain takes on too much stress and then it starts to change the way it makes hormones and signals, the immune system.

And I think that when you can re initiate, proper circadian rhythm timing for growth hormone, all things start to, align. So I, I like that a lot. And then I like it in individuals that are even younger that have shut that down just due to the amount of excess stress they have.

And therefore now they're, you know, they're losing lean mass, they're gaining fat mass, their sleep circadian cycle is off. And I think that's a good thought process for well, why would I want to give something that would help me to naturally secrete growth hormone versus, say, giving growth hormone, right.

Which to me, you're just suppressing it when you give it. So why not try to make your own, do the work that it's meant to do and activate the receptors so that you are able to, you know, grab that growth hormone and utilize it.

And I've seen beautiful things happen with it. Right, 100%. And I, you know, I, you know, it was the in vogue thing when I first came to functional medicine, like in like 2000 and the early 2000.

Right. This growth hormone was really in vogue. And I would see a lot of those patients that were a little bloated. And I had the stereotypical the there people were hitting a lot of home runs, you know, you know, back back then at

that time and I, I was taking care a lot of those people in anesthesia and, and, you know, I always felt like something was a little imbalanced because they were driving that one segment of the hormonal system too hard.

And then when I see people on the growth hormone secreted, I said they things things overall seem a lot more balanced. It's in the circadian. We've certainly seen a lot of people will tell me, God, I sleep better.

Oh my my right my my Woohp data. My aura ring data is a lot better. You know with absolutely. Do you do you have most people take it at the night or in the morning or sometimes both.

Yeah sure I mean typically I'll start them at well we start them at night. And then sometimes if they're more interested in body composition we'll have a do with them.

Do it twice a day, morning and night. Obviously you avoid taking in carbs and fats, you know, for a good 30 minutes to an hour after you would do that.

And even for protein, I have people wait, but if they want to, if they're starving, they want to drink a little amino acid. You know, it's fine. And, you know, the only time we do it, absurd time of day is if somebody is incredibly catabolic or a, you know, protein, kind of a quick exit kind of, situation, but typically once or twice a day, see how it goes.

And that's why I like that kind of segment of, peptides. I think another area that's incredibly important. And one of my favorite peptides, especially for, just people who have lost energy production, for any reason.

I don't care if you're a survivor of the pandemic or you're, you're a metabolic syndrome person, right? Just not ass pre-diabetic. Oh, I feel sluggish.

My muscles get achy when I exercise. I love moxie oh, moxie for me, which is a mitochondrial catalyst, it helps to invigorate insulin receptors. People lean out on it. They.

And it's because in meta formation, you remember, when you're metabolically inflamed, you turn off what's called glute for transport. And when you turn off glute for transport.

Now I'm making two packets of energy per molecule of ATP, glucose instead of 38. And so I'm going to be a slug. I don't have any choice. And it's one of those interesting things that people I think, you know, for the longest time, people would say, how can you be a diabetic and drink that Coke?

How can you be a diabetic and want to reach for that cookie? If you understand their chemistry, they're reaching for it to survive because they're gas sucking SUVs metabolically.

Right. And so what I like about moxie and and what I find is the epidemic in America, 50% of the population is pre-diabetic or diabetic, about 80% is overweight, 42% obesity.

People are in a crisis or what I would call a pandemic of mitochondrial inefficiency.

Growth Hormone Secretagogues and Mitochondrial Support

And so I really like modesty because it brings people back to having energy. And that's not just, you know, people that are overweight. I'm talking about an athlete who they overtrained and they, they kind of do the same thing to their mitochondria.

They just look better. How long will you you put them on it and what kind of dosing algorithms do you like? Yeah, sure. I mean typically I do five milligrams twice a week.

I like my office sized version. My office, I think is a more stable version. And so I, I like that five, twice a week. And it really depends on where they're at.

If, if we're reaching for, a weight loss goal using something like modest C with maybe, you know, like, there's another peptide called a body, you know, a 906 four, which is a growth hormone fragment that helps to burn fat.

Yeah, you could do those together. But, I mean, what I do for folks is, well, where is your energy at? Are you following your diet? What's your sleep like?

How is your stamina? What's your heart rate like? Because I look at things like resting heart rate is a measure of metabolic capacity. You know, when you're resting, heart rate's below 60 to say between, you know, 48 to 62 and you don't have bradycardia.

You know, you don't have any kind of problems. That's a really good sign that you're not sympathetic, dominant. And we know that people that have a heart rate of, say, 62 to 70, that's, another whole issue because now you're increasing your risk for cardiovascular disease.

When you just get into the upper 60s, even, it starts to increase that risk. So I really look for how long do I need to use a peptide? Well, it's as long as I need it to help somebody reestablish homeostasis.

And maybe the older they are the the longer they need to be on it. But I certainly don't think they need to be on it, you know, forever. You know, it's at least 90 days to six months that typically.

Okay. So then I'm going to recap on one thing because but I love where this is going because as we look at this sort of lifestyle progression of, of meta formation.

Right. And so then even if we superimposed upon that our hormonal status over the arc of our life, our hormones are going down. And so then you say, well, maybe we could support them and then but if you start taking hormones, then that turns your body's production of them off totally.

And so then you're like, okay, I got that. Don't know. That's another problem. That's another problem. And so then on the for the the growth hormone secreted dogs, you can kind of maintain that.

And it has all of these different play trophic different effects that are sort of right. And then so that's category number one. Category number two which is I'm so glad you said this.

This is as somebody that takes care of a lot of sick people. What happens is as you're going along in that meta formation is getting worse. You told me that the next as we after lipid dysregulation and all these things, all of a sudden our mitochondria don't work as well.

And so then everything the mitochondria is everything. And so then once that starts to not work, well, now you don't have energy. And if you don't have energy then you can't do any of the things that you're supposed to do from DNA repair to, to just maintenance of, of our biochemistry.

Yeah. Yeah. Autophagy. Right. The energy just to clean up. To clean up. Yeah. Exactly. Yeah. So just like a house and and and so then I also have found the mitochondrial peptides and Motsi is so helpful there because just having a little energy that's, that's not sort of like the, the, the speedy kind of stimulating more.

It's, it's just a more natural, good, efficient horsepower energy. Right. And and then that has all of these side effects that are positive. Absolutely.

And, you know, I think that's the biggest trouble that happens is as people start to lose that mitochondrial capacity, what do they reach for? You know, I know caffeine a fat drive is the biggie, right.

And, and over a long time, and then now it's all, well, I need Adderall. I have a A. D. D.. Well, no, you you have adult mitochondrial capacity losses. What's going on? You you know, not.

You know, so it's. I think it's incredibly important, because what what is happening is people drive more stimulants,

more sympathetic tone, meaning you've got fight or flight.

And no, it's not. When you stick in that fight or flight perspective, you're you're driving more endothelial dysfunction. Your blood vessels are getting stiffer, your immune system is becoming challenged.

You're creating pro-inflammatory chemistry in your in your brain. That's that's now signaling across the body. And it's kind of really important to understand that what you just said, getting people to have a natural energy pattern.

Yeah, I feel good. I have energy, I'm able to do my daily tasks efficiently. I'm able to exercise efficiently. I don't feel like I got to be jacked because I have people coming to me that they're doing 600mg of caffeine before they go in the gym, right?

And they think that's helping, right? Yeah. It's it's, it's it's interesting. And so then the what on the one side, we're having this conversation about endothelial function and health.

And the other side of the equation is you said something that a couple people might be interested is losing weight. And I'm reminded of that Jimmy Buffett song losing Weight without seeds, eating sunflowers.

He's losing weight with that speed eating size, actually. So then we're we're so you just mentioned a great way to lose weight without speed with which is that this combination of this growth hormone fragment plus my seed.

Take me into that a little bit. And how you how you'd like to dose that and think about that. Sure. So I mean I still go with my, you know, moxie, five milligrams twice a week for me works just fine.

And the majority of people feel wanting to go a third time a week. I've had people do that, but typically five twice a week is good. And then the growth hormone fragment, iodine 964, is is is the fragment that really helps with burning of fat.

And I've done 25 units twice a day to go with it. Okay. And I'll do that for about an eight week period or 12 week period. Diet's got to go with it and I love starting them.

Even with a, you know, doing like a Pro line kit, like the first five days just to kind of kick start autophagy. Right. And then get it going. And, and then, okay.

For how long? Probably a 12 week, event. And then I'll typically we'll flip them over to, you know, more of just the secreted dogs. And maybe they need to be on my to see more.

The biggest thing to know about, you know, for me anyway, with modesty is you just can't forget that your body needs chromium, magnesium, vitamin B3, as principal drivers of that insulin receptor.

So, you know, don't forget about the fact that you still need nutrients and and look, I've done a lot of research on weight loss. I mean, the stimulant weight loss plans, we know just fail.

I mean, in people, when people go back to them because their brains foggy, not because they really desire to be back on a program. They want they want the hit that makes them feel like they got energy again.

Which is unfortunate right. Because we haven't helped them that cracked that code for getting energy every day like they should have. You know like the and so I think it's really important for that.

But, but I think the, the biggest thing is, is that you still have to have the lifestyle habits. I mean, that I want to be on the treadmill 50 minutes this morning.

I, I wouldn't think I would have enjoyed the sitting and reading this morning, but I know I need to be on there because I've got this great family history of, you know, my brother was 476 pounds at one point.

My mother was obese, my father was obese. If I don't exercise and watch what I eat, people that see me go all white, you don't have to worry about it.

Well, no, no, I don't really. I don't worry about it every day. But I'm like, you cook rich, cook great foods that taste delicious but are healthy. And then you have to exercise.

And then you have to make sure you have the right. You got your trace nutrients and balance in check. And then that allows these peptides that really take off.

And I've always been an advocate for people understanding, you know, balance as much to your lifestyle as you can. Now is it true that if I just used my see what I get more energy probably.

You know, there's people that just take it and they don't do a lot of other things and they get great energy and they feel good. But it's are you maximizing it?

And that's the way I look at it is how do you maximize applying, you know, peptide to the, you know, to the process. Now, it just parenthetically sort of related to that whole conversation.

And I think that there's a big overlap, because if you look at the people on sort of the Metaflow nation and, they're on this spectrum of mitochondrial dysfunction that, that a lot of those people struggle with weight loss.

And so there may be thinking, okay, this could be good for me because I can balance my hormones and help with weight loss. On the other side of the coin, a lot of those people also have a lot of brain fog.

And that's like trying to, you just. You said something that I suck in my mind, thought like a thought. You're trying to push through jello. That was a good one, right?

Yeah. And pushing it out through jello. And I asked people that they looked at me. This is how they answer. I said, do you feel like, you know, you're pushing a thought to gel?

And they look at me and they go. Oh, yeah, I do that, right. Yeah. That's funny. It's so often. Right. But it really it it really it's interesting. I mean, I tried to ask people questions that they can relate to.

If I talk to them about, do they feel like they have cognitive loss or cognitive, you know, disturbances. They go, I don't know. But if I say, do you feel like you're pushing a thought through jello?

They go, oh my God, that's exactly how I feel. If I hit 2:00, I just can't get that thought. There. And I think that's important to understand. There's a gut brain connection, right.

You got the nervous system between the gut in the brain. And if you've got food allergies, you're triggering inflammatory compounds, creating a leaky blood brain barrier.

That then is it's triggering a lot of, oxidative damage. But then you could do something like have a TBI that creates a leaky gut. Right? It can go either way.

You could have a head injury. You could be exposed to things like environmental burden or stress or wine or bio toxin illness. Right. That can be triggering these inflammatory processes.

And that's why I think it's important to look at, well, what do we do, to support brain health. Right? I mean, how do we do that? I mean, obviously, I mean, I've done a lot of research on in that area with like app that, synapse and nasal spray, which isn't a peptide, but, you know, they did all that developmental work.

And, you know, we've got it out in 50,000 people's lives now. But I I'll tell us about the mechanism of that. Well, that's interesting. I'd say 90% ginseng aside, our region set aside, and it's got multiple mechanisms of action, probably the most prominent is the downregulation of micro glial cell activation.

Weight Loss, Brain Fog, and Cognitive Support

So, you know, your your immune cells, your immune bag, immune trafficking cells in your brain, or microglia in the microglia, when they get activated, turn on a lot of oxidative forces or inflammation, because you're you're trying to rid yourself of a problem.

But the problem is, is that micro glial cells don't turn off very easy. So when you have micro or glial activation, it's kind of a slow burn of damage, to your, to your neurons, in your, in your nervous system.

So when you use, gene set aside R3, it helps to inactivate the, you know that, but it also keeps the calcium channels intact down, regulates NMDA, helps in terms of, Bdnf or brain derived or tropic factor, to, to be increased so that you help with rebooting of neurons.

So there's actually several interesting mechanisms that have been shown in research on that. I think it's why I think things when you start to add things like that with peptides like C max.

And so I think where you're really up regulating neuronal integrity, neuronal protection, and then that rebutting and pruning of the of the dendrites.

Right. That's what you're really trying to do because once your brain gets under excess stress, you hit your head, you get super stressed out, you're sleep deprived.

Whatever. Whatever it is, once that occurs, your progenitor cells or your stem cells for your neurons, they don't bud. So you're supposed to bud like do neurons, you know, like a, you know, a newly pruned dendrite about every 4 to 6 weeks.

You can do that. But if you're if you're under meta formation, if you're under chronic stress, the cortisol and the and and the NMDA receptors that are on that stem cell stop it from progressing in budding.

And that's where I think peptides even add more value to kind of help with that regulation of that inflammatory signal that allows for that neuron to grow.

And that makes a lot of sense. Right. Because diabetes, right. That type three or Neo type three diabetes is called Alzheimer's. Right. So meta formation once again leading to there's cognitive issues that occur in individuals.

But how do you like to dose to see Max and see like, you know, that's interesting. I mean, not young, probably at 30, 30 units a C max. Cell. I will do. You know, intranasal.

And so I'm trying to think of what the, the, the intranasal dosage is that we use on that, but we to use. Well, so I, I like to use like, 750 micrograms of both of them, and then sometimes I'll, I'll do one of them.

Sometimes I'll do both of them together. There's all have a cohort that is kind of a smallish cohort, but there's people that have had anxiety. And a lot of times this is women that are friends of mine that have had anxiety and sleep issues for a long time.

Right. And and not really that I even knew they were that anxious. And then I just kind of met friends and we started talking and then and then I started to notice this in patients.

And then the combination of C max and C, like at that dose subcutaneously at night. They tell me this is the first time I slept in 20 years. So and interesting and so then that's pretty interesting because the you know, I don't know if that's a BNF or the C max mechanism or is this a Gaba c like mechanism, like with the Gaba side.

Right. That sort of and so that both or both. Yeah. The other thing is, is that we'll take you can just buy this is a cheap way to do this. You can buy the nasal spray containers.

And then if you take a ten milligram, vial a C max and a ten milligram vial of C like that, you get. Right. And then you can mix those up in five CCS, and then you can do that.

And generally and if you do five CCS of that solution, a nasal spray is going to be about 200 micrograms. If you do ten ccs then it'll be 100 micrograms.

Right? Right. So then what. So well what we've had anyone work better. Well what's that? What works better for them are they do well in and they do better subcu to.

I think subcu by far works better. But then I also think that having something that's in the refrigerator that like, I like, I like kind of with these things, I like a little diversity.

Like, I like a, a little, you know, a little shot of something that you can drink. I like a little a little sublingual that I can take and and. Oh, yeah, that's great. So then, because I'm probably going to forget to take peptides one day for sure.

Yeah. You know what? I'm. So it's like that. Yeah. I also want to echo what you said. Then if you think about those neurological patients, you know, when I, 15 years ago, when I really was getting into this, I thought, oh, you know what I'm going to do?

I'm gonna fix people with neuro feedback because I was going to train the there was a part of the brain that was off and, you know, yeah, all these kids with ADHD, right, are going to wake up that portion of their brain, wake up that portion of the brain instead of giving them a stimulant, which is the same thing.

The stimulant for ADHD is the same thing that we're trying to give to the person who has weight loss, because I think there's they're on the same spectrum.

Without a doubt, their dopamine reward cascade is way off. And so then interestingly, the the mitochondrial peptides, then you start to turn those mitochondria on.

I don't need to do Lerato training to turn that part of the brain on, because suddenly that brain just turns on. And then as soon as that part of the brain has energy, then it can do its job.

That's right. So then it's kind of like, interesting to think about neurological peptides that are actually working on a mechanism, while at the same time we're sort of turning those cells on. Yes.

And then when I think neurology, I a lot of times I think immune and I know you know a lot about the immune system and immune stuff. Me and peptides. Tell me about how do you think about immune stuff?

Vis-A-Vis that conversation? Well, I mean, you can't get away from, the fact that, you know, inner you always have these two sides to your immune system, right?

You've got this innate and adaptive immune system. And the more that we create these shifts in your immune system, the, the or imbalances in them, the more we're likely to create some sort of attack somewhere, somewhere or another, you're either going to get an attack or you're not going to have a good defense.

It's kind of how it works. So when you look at the thymic peptides and and, you know, thymic peptides have been around a long time, I mean, they were orally given originally.

I mean, I remember giving, you know, gland thymus I still give glom thymus extracts, freeze dried like flies, lots of thymic peptides in them. Then we went to the thymic protein packets that you would tear open and you'd pour them underneath your mouth.

And they were specific, you know, more refined thymic peptides. But I think that, you know, when you when you start to look at neuro immune. So when you hear the term neuroinflammation by default, that means that there's an

immune activation that's taken place and that that immune activation is chronically there.

And I you know, I loved TV for because of its immuno modulating effect, because I find that for a lot of people, you know, not people that are actively in an infection where they need more natural killer cells right there.

So that's where thymus and Alpha one became so big, right. We could really crank up, you know, defense. But I what I really liked about, tb4 was its ability to immuno modulate.

So whether I'm looking at you know, people with autoimmune thyroid or in terms of their brain, it's a component of regulating their immune system. I mean, BPC 157, which has this wow, massive tropic effect.

Neuroprotective, right. So cognitive neuroprotective seems to be a big benefit if people have a, you know, a head hit, super protective for repairing the permeability of the gut.

I, I think the immune regulating compounds and it's really tough to kind of start to separate because if I'm anxious and nervous and we do your protocol Cmax selling, I settle my nervous system down.

My immune system starts to go back in the balance from that. And that's why I try to work with people and go, where? Where are we going to focus your peptides.

Because they all can start to kind of come together and provide benefit. And before you know it, when you're first, a devotee of peptides, right? How many can I take because you're reading about them and then you start to understand.

All right. What what's appropriate? What do I need to do for this person now? And so, you know, for me, in terms of, you know, inflammation response and soft tissue, I know one of my first exposures to peptides was on my son's, les franc injury in high school.

You know, he had a list from injury. I did I did TV for BPC, and actually back in the day, it was because it was a, you know, still out on the market.

So so we gave, those three, and by the time he went to surgery, they had a hard time finding where they were, where the tear was. And he had no virtually no hematoma.

And literally where I found it to be interesting was, he also was a track athlete. So as football season ended, but within four months, he was spinning on that foot and throwing a discus.

Ended up winning the California state championships. But only five months to six months out of a Liz Franc injury. And if people are listening, I list franc injury.

It's a real common injury in pro football because it's this torsion injury on your foot and you basically use several ligament in your in your foot and it really hurts bad, like you can't run on it at all.

You can't really put pressure on it at all. Typically takes 12 to 18 months for that to repair. Yeah. The apparently the did you know that story? Napoleon's general was named les Frank, and I did not know that. Oh, yeah.

So he's riding along and has, horse and then gets knocked off. And so his foot's in the stirrup. And so then the foot is stuck in the stirrup, and it basically rips the, the ligament structure that, connects basically the metatarsals to the proximal foot, because you can imagine that that foot stuck in there and you're getting dragged by the horse, right.

Immune Modulation and Thymic Peptides

And so then and so then football's sort of could do the same thing, that traumatic thing. And then I basically my old life, I used to do, anesthesia for that surgery all the time.

And so I would do like completely put the to sleep, I would do I would do a sciatic nerve block in the popliteal fossa and I would, I would do all of this stuff because it was so painful and brutal.

And then that's just like this. You hate it when you hear somebody that, you know, had that, you know, and and I've had similar experiences where we, you know, I've, I've had people that had sort of this frag fractures that didn't end up having surgery.

Right. It seemed inconceivable to, to like the, life that I had lived in the past. Right. Most of them still require surgery, but, peptides for musculoskeletal things, particularly stabilizing ligaments and and things like that as well, which peptides that you use for him?

Tbe for BPC 157 and I actually gave a grp six I gave, I gave a, you know, trying to wake up the growth hormone receptors on his tissue. And, worked out really well.

I had a guy that was a tactical instructor. They couldn't lift his gun anymore. Like if he had a labral tear. Terry's minor tear. They're telling him he's going to need surgery.

And so my nurse practitioner went to work on him, and then we, you know, worked with him on, you know, doing his, you know, doing injections. And, you know, six months later, he's out teaching and and, you know, do what he does.

And, it's amazing what can happen with connective tissue. Yeah, it really is. It's also, you know, interesting. Sort of as you think about things, if you're if you're injecting into a ligament, a structure and fascia with a peptide, if you think of it, you're putting a drug that has a benefit and it's and but it has a dose.

And so then even if you're close it starts to spread and get everywhere. Yeah. And so then what we we would typically would do is use, ultrasound to see the needle and watch that fluid go above and below the ligament and potentially into that if there's a tear.

Right. But compared to other things that we like, like exosomes, we would like a lot, but that there's a certain amount of growth factors in there, and we're being charged for that.

And right, we're being charged a lot right for that. The peptides and I still will have a lot of people that are years out and say, oh, yeah, I still don't have any pain in my shoulder.

And yeah. And so that so then to me, I'm so interested. And in the next five years to sort of build this experience because you get a kind of a spectrum of what you get out of the from peptides, you get a spectrum of what you're going to get out of regenerative medicine and stem cells. Right.

And so then suddenly you build this model. But I, I think when we, sit back and get on a podcast in 20 years from now, we're going to we're going to be, you know, we're going to say that that is a dominant aspect of medical care.

Absolutely. Yeah. Without a doubt, I think. Well, I mean, I think what, you know, you've got hundreds of peptides that are now coming into the marketplace are being researched.

You know, as somebody has probably mentioned on your, you know, your, your summit insulin's a peptide, you know, I mean, you know, we've been looking at these since the 1930s.

They're, they're infiltrating all aspects of health care. And I think, you know, where the real value, once again, from my perspective, is that when I look at that model for aging and realize it is people are moving through time, either their cells are in a homeostasis of getting rid of debris, appropriate signaling cell to cell, appropriate signaling organ to Oregon.

And they're sustaining that as they're aging. So they have a better health span, right. They're living more vitality longer, or there's a degradation at the cellular level where now the signaling is misconstrued.

And now I'm making more tissue acids, and now I'm inducing more mitochondrial damage. And now I'm gaining weight and feeling fatigue and having aches.

And now I'm cognitively turning on my neuroinflammation, regardless of whether it's, you know, an exposure or just my lifestyle. The bottom line is I it where where I think peptides add that next layer of value is helping us to re initiate that that signaling of hormone to hormone chemical neuro neurochemical to neurochemical cytokine regulation versus autophagy.

Right. We get these inflammasome that that start to just get released excessively. And when you have excessive inflammasome by default you stop the cleanup of your cell.

Autophagy is is downregulated. So it's more than just oh I'm going to fast and induce autophagy. You have to down regulate the inflammatory chronic signal so that your cells can remember how to clean house again.

And that's why I think it's important to understand peptides play a role in that Reregulation just as all the other lifestyle factors. We talked about the count.

Okay. So I'll take that. So then so then given that let's say that infections and toxicity are, relatively significant driver of matter formation and end of the scale conversation.

And so then the, at least in the United States, thymus and Alpha one and thymus and beta for are less available, right? Because of some regulatory, factors.

Interestingly, if we were talking about musculoskeletal, if there's a patent for thymus and beta for, for for peripheral neuropathy, so then you begin to realize, oh, okay, suddenly, these, these molecules have a variety of effects.

So they're good for nerve, good for tendon, good for the brain. But on the immune side of the equation, you know, stimulant, has been, has been sort of a new newcomer on the scene, maybe seven to tell me about some of your thoughts about that.

How are you using it? And has that been for you? Yeah, I mean, I, I mean, I've been pretty happy with it. Certainly don't have the years of, of it down because it just came out over the last year.

I use it pretty similarly. And dosing is 2 to 4. Typically 500 micrograms, you know, I'll do 500 micrograms to a to actually one milligram, you know, and it, you know, up to a couple times a day, I really like, and one of the biggest reasons thymic peptides are important is that either through infection or stress or aging, our thymus gland stops making mature thymic cells.

They make what's called adolescent thymic cells. Right. And so when they're not matured, you cannot get the appropriate defense, right. As you're aging against an incursion, which is, you know, a bug or a toxin, typically a bug.

And so I like Simon. I mean, I've been very happy with it in terms of helping to boost people's immunity and to get them to, you know, kind of countermeasure against, once again, you have to remember, as it is, someone's in that metabolically inflamed state, they grow more yeast, they have more dis biotics.

Flora, you know, their terrain. If we think of that concept of homeostasis. Well, what am I growing? I'm growing weeds and bugs that I shouldn't have.

Or am I growing beneficial for, and cofactors that my body needs? And I think when you when you think of people are compromised with, you know, they're, you know, kind of chronic candida, chronic dysbiosis, chronic cortisol issues, the need for those thymic peptides become more important because you're, you're you're in an environment that's more cytokine rich.

And, the thymic, response has been, you know, sequestered, right? It's reduced. And so that's why I like thymine

works great. And and I think it's, you know, once again, great that we're able to have something in that, in that family to be able to utilize it.

And that's that kind of is, you know, we think, okay, Metaflow mentions it's going like this over our life. It's raising. And then we talked about hormones kind of fall off a cliff, especially growth hormone.

The thymic proteins and peptides kind of fall off a cliff too. And then that's right. When people start to get infections, I, I mentioned this the other day, you know, they say pneumonia is the old man's friend, but that's a relatively dark.

Yeah. Statement. It's number five cause of death on people over the, you know, the geriatric population is the fact they can't fight off a flu, but. Yeah.

Connective Tissue Repair and Regenerative Aesthetics

And so then I think this is something that for me, as a, as a clinician, you know, having people who, oh, every year, even people in my family every year, they would get sick.

And when they got sick, they would get bronchitis and it would be chaos for two weeks. And then a lot of times, support and they do. You see that people do a lot better, you know.

Yeah. Yeah, they do that. And if you can get their cells going right, using things like beta one three glucan so their memory cells can actually, you know, identify what the heck's going on and attack as you.

How do you like the dose that I use beta one three glucan 500mg three times a day? If unless I'm using the, I guess if I'm using the the German nano Thais, you know, beta one three glu cam, which is kind of an enhanced buccal absorbed spray, that's, you know, in more like the 50mg.

It's about a 10th of the dose because it's, pharmaceutical grade sanitized, you know, proven absorption and, you know, works on the detecting one receptors to improve, immune response and anti color response.

Okay. So then we've got we kind of covered immune. We we covered mitochondria. This is all this overlap. We're we're kind of into the medical school. All the conversation.

Another topic that's near and dear to my heart because it relates to everything is connective tissue. And on my list of questions to ask you is the gray copper, which, which we, we have really enjoyed.

How do you like to use it? What's been your what are some of your thoughts about that. Yeah. So I mean, even the copper and the copper how you're on. Right.

So there's, one that has how you chronic acid bonded to it as well. I like both. One, if you're trying to stimulate collagen synthesis, say you're doing it statically. Right.

The how on can be really, supportive also for hair, you know, getting hair to regrow the how you're on. It's really great. Typically on GHQ, I'll, I'll do, 10 to 20 units of GHQ.

And then I'll, you know, I like, you know, spot dosing it, so, you know, where's the trouble? And, I'll apply, you know, for a short burst to get healing because the copper actually helps with, you know, getting integration of proline and hydroxy proline, which is really important for the knitting of your healing of your skin and tissue, you know, in an area.

So are there ten units twice a day? And then just kind of fade out to ten units daily. And then I like it as a maintenance, you know, three, a couple, three times a week.

You know, I know I had a little bit of, GHQ. I think that the copper is really good. It seems to play well with others also in terms of, like, you can mix.

We've we've, been impressed with the whole esthetic side of the equation of those, those peptides. And I have I have to tell you that I think we're, we're in this sort of well, look back at this moment as this is like the moment, the Botox moment, you know, when everybody was it's kind of, you know.

Yeah, yeah, I, I predict the there's going to become an ethos of a more natural but real healthy look. And then I'm kind of starting to do like things where I'll talk people into cutting back on Botox and sort of intersperse peptides in the face.

And you can do BPC and BPC, GHQ, you can do a little bit of it from Marilyn too, right? I mean, have you been doing that for the In the Face? That's awesome. Yeah.

What kind of what kind of same same type same type of dosing that you. Yeah. Just a few units. You don't need a lot and, and and you know one of our instructors, that I had at the Peptide society, Doctor Duke it was in, with South America, surgeon the biggest statics practice.

I mean, she's kind of super famous there, and now she's in the US. She teaches a completely natural esthetics, like she activates the PRP, that she or press that she that she makes with peptides.

Yeah. So I went to her like, I went, I was there. Oh, are you there for the lecture? I was that's right. Yeah. And so then we're we're doing that now.

And so then basically what, what she does is she makes what's called the plasma gel. Yes. And so then she'll take, blood out and then your blood is kind of 50%, let's say plasma and 50% cells.

So she takes that plasma and then, and will separate it out into two parts. So one part, she will cook and heat up until it turns into a gel. And then the other part is a, just plasma, and then she'll mix the peptides with the plasma and then mix the peptides and plasma with the plasma gel.

And then that, that is just your own natural body stuff. And it's going to have the, the peptide and it has everything there. And then it gives you the, a little filler and glow that's naturally releasing over time.

And it looks good, feels a little different because like if you get filler then you kind of start to palpate around. You feel that. Yeah, it's like woosh, woosh, little crunchy.

Yeah. Sometimes it doesn't break down. And then we are a little concerned about that just because that is something that could be a biofilm that infections can get on.

Yeah. And on your face is the worst thing that has ever happened to you, right? Pretty much. And so that I, I was enormously impressed by her. I think she's an angel.

And I was just like, for me, it was the highlight of the awesome. I'm going to let her know that because I, I think her work is incredibly novel. Yeah.

And so then that's a pitch, for your, your whole, everything that you're doing. I'm super impressed on that front. Oh. That's great. No, I think I think, esthetics over the next ten years, if you're not really focused as a practitioner that's doing esthetics and you're not focused on learning the these types of techniques, I think you're way behind because I'm like you, I have a lot of concern over what people are putting in their, you know, in their face, just from the standpoint of immunologic changes, biofilm grafting, I mean, all of that stuff.

Right. And, and so to be able to use your own body cells to rejuvenate your own collagen and really create a natural beauty, I think is just it's where people need to go.

Yeah. The the other thing about this one and this is just, a interesting one to kind of think about the, the fillers and sort of those alternatives. It's interesting.

Like, you have all of the esthetic people over here, and then you have like the regenerate. I come more from kind of the regenerative messages. Yeah. Yeah.

Right on. And so then we're not we traditionally have not been that concerned about esthetics. We're just like, I want to go play football this weekend.

Right. And try and try to fix it. How can I make this joint work again? Yeah, exactly. However, how we think about things is what's the blood supply? What's the nerve?

What's the muscle? How do we fix all of that stuff? And a topic that came up in your and your this the course that I talk about was we need to begin to think the way that we think about joints and the rest of the body, about the face, because we need to get these muscles active, strong, think about blood flow.

Think about it. Because the side effect of that is it looks good, right. Exactly. Well now you're going to be assessed. Now you're going to be an esthetics doc.

That sounds like well we we are. And so then we do you know, we do like the BBL and then we do we, we do the, the the all of the facial injections that I used to do, you know, injections in the eye and everything is not easy.

I'll just. Sure. Sure. And so we're, we're kind of and will do we interestingly will do, you know nerve blocks in the face if we're, if we're doing procedures or as I'll just and fundamentally I think that the do it using regenerative and peptide kind of modalities.

Right. So is going to change the whole trajectory of, of the esthetics because it's really inside out healing. Yeah. Yeah. It's dead by the time it's out here.

We got to get you know you got to get it going from the inside. Yeah. No I thought that, I was real happy there. And then, you know, obviously, all the work that, Doctor Kathleen O'Neil Smith was talking about with, you know, her work with the fascia once again, if you start to think of your body, is this universe, right?

And, you know, opening up the fascia, you know, in the fascia, obviously being a little thin membrane that's around all your muscle tissue, they kind of can get twisted and contorted.

And now you get hypoxic areas in your in your tissue. When you think of the physical medicine, I remember I was at the NBA summit lecturing all this pre-COVID.

Everybody there was either worth of pods or regenerative medicine docs. Right. And then there was me. Yeah, I'm talking about blood and chemistry. And they looked at me like, all right, what's this guy talking about?

And I said, look, I don't know how you separate biomechanics from biochemistry. If I mess up the the fascia, I trigger inflammatory compounds. And if my diet's not right and I don't have enough nutrients, I trigger inflammation that affects my biomechanics.

And I think it's that really deep understanding of just just what you're saying. Joints connective tissue, the connective tissue matrix by far carrying so much information about inflammation signaling that's going on another reason I think peptides are important is the fact why is BPC have such global effect?

I think it's because the connective tissue matrix is being modulated in terms of the metallic protein is, activity. So you're getting a lot less of them, like a MMP nine metallic protein, H nine metallic protein H three signaling that is triggering a lot of this kind of pro thrombotic pro-inflammatory ischemic type of chemistry.

And that's why I think it's a you know, that the, you know, those types of connective tissue, therapies, I think are much more global. I remember reading a book by Kissinger called The Connective Tissue Matrix, and it blew my mind.

I mean, because it was just like, oh, I mean, there is so much information being translated through that connective tissue. And that's why I think we're seeing these dramatic effects when you're using things like, you know, even using simulant.

I mean, I'm just going ahead and using that with BPC. You start to see these global benefits because we're getting that modulation right. And, and the, the interestingly the thymic peptides.

So thymus and beta four but thymus and alpha one timeline they're all seem to be helpful for nerves because I think nerves have a lot of immune stuff related to that.

Absolutely. And, and and so then my sort of piggyback on that, as is sort of the main thing that I was sort of known for was Hyde nerve dissection. But basically that means, you know, if you imagine when you rip open a chicken and you see that cobweb kind of stuff, what we do is we use an ultrasound and we put a needle in there, but then when we inject, it spreads through that cobweb type of thing.

So sure. And, and and that actually is one of the best ways to deliver I think peptides. But almost anything because it spreads and it spreads around the arteries and around the nerves and then, and, and then it starts to move through the lymphatics.

And so then it and so whether you do that in the face or whether you do that for the knee, and then it will heal the lymph nodes that the drain, that joint or that part of the body.

And I think you're bringing up a part that is so important. You know, a lot of people don't realize that the lymph isn't just collecting garbage. It's also involved in the signaling of inflammatory chemistry.

And, and so it's it's great to get that, that flow and, and great to get that signaling. I happen to think that what you're doing when you're, you know, modulating that lymphatic response is partly that you're down regulating inflammasome activity so that the lymph is no longer participating in the signaling in the that inflammation response.

100%. Yeah. Well it's a 100% delight to talk to you and, and be with you. And thank you for all the amazing sort of work that you're doing both kind of with people and also educating doctors and helping to change the world.

Well, it's fun. It's it's pretty it's pretty fun when you when somebody comes in and tells you how much better they feel. I don't know if there's a better feeling.

So, you know, when I love it. When I get to talk with docs who are way at like yourself. I mean, you're so accomplished, gifted and applying knowledge in your art, right?

Because that's what counts is we get this knowledge and we kind of how do we mold this, make it work. So yeah, awesome. Thanks for having me. I look forward to what we're going to discover next.

How about that? All right.