Introduction and Background

Welcome to the Peptide Summit. My name is Doctor Matt Cook. I'm with Doctor Corey Tisch. Our, my, my team was actually really excited that I'm interviewing Corey, and they said, we think he really knows what he's talking about.

And then I spoke to him this morning and that is definitely true. I'm super excited. We're going to talk in-depth about Lyme complex on this peptide strategies for taking care of, difficult patients.

I, I showed up, to work, and I have all of these, dress shirts that I wear for a podcast, and, someone took them to my house. And so then Tanisha smiled and said, don't worry.

You just look like you're going to a mumford and sons concert. So, it's it's a casual, casual podcast today, but. So, nice to meet you. How are you today?

I'm doing great. Yeah. Thanks so much for having me. Really excited to talk about peptides. Something that, I've been using a lot for the last about three years.

And, continue to do as much as I can to learn more for what we have available to us anyway. Awesome. Tell me, tell me just a little bit about of your background in terms of complex illness and stuff, just so people get a sense of where you're coming from.

Yeah. So I, I've been in practice for about 20 years. I originally started off with the goal of trying to work with, chronic illness population and people who really had been sort of left destitute by the mainstream medical, paradigm.

And, you know, the fibromyalgia, chronic fatigue world and, that, you know, exploration kind of led me down a rabbit hole that, I described earlier to you as sort of representing what I, what I sort of have is for bubbles in this chronic, you know, chronic illness, Venn diagrams, that is, one is, chronic infectious illness, like, things that, you know, we we all know and, and talk about things like Lyme disease or chronic viral illness is, you know, fungal illnesses, parasites, all of that world.

And then we have bio toxins. So that's a little world of mold and heavy metals and, and solvents and then immune dysfunction. We'll see, like primary autoimmunity.

But there's also a lot of just, individual, you know, immune issues. And, some people are just not geared well, genetically or otherwise, to deal with the environment or the organisms they encounter.

And then the fourth thing, which is probably the most, recent addition to what I do, and a lot of what I attribute to having a daughter with hypermobility is, the structural world and looking at things like, you know, Ella's danlos and that connection or association of mast cell activation or even traumatic injuries like, you know, like TBI and other things.

So, I'm always kind of trying to parse out what's going on between those four bubbles and how to individualize treatment to get people to function again.

And, and function well. So, yeah, that's amazing. Okay. 100%. Well, so, I'm just going to dive into some some great topics. And so then one thing that's not a peptide, but it's sort of peptide adjacent.

And it was the top of the list of, of stuff that we're gonna talk about. And it's something that I think is an evolving, area that we're interested in.

And a lot of people are interested, in the anti-aging world, but I think it has some immune benefits. Also, with rapamycin. Maybe give us a little introduction to Reformation, how you think about it and how you like to use it in clinical practice.

Yeah. I am so like you, you already sort of alluded rapamycin, as I see it, as two really distinctive roles and benefits.

Rapamycin for Immune Modulation and Aging

One is sort of for the general aging population and what we can see as far as its benefits in, reducing overall, you know, morbidity as we age. And the other one is, it's immune modulating effects and, dealing with, you know, the increased, you know, antigenic presence around us, we're all exposed to a lot more chemicals, a lot more allergens.

And then in the people that I'm talking about with things like bio toxins or, chronic infections, a lot of these things aren't going to be completely eliminated from the body.

So, you know, again, not to keep bringing up Lyme, but, you know, Borrelia, but any of these intracellular organisms that we're going to we're going to think about Borrelia or Bartonella or toxic Brucella, you know, tb all of these things go on and on.

These are organisms that we, we can't get rid of completely. So the goal, of course, with antimicrobial treatment is to lower the infectious load to the point that the immune system ultimately can sort of quarantine those things away and manage it to prevent it from getting worse.

This is a long winded answer, Matt, but, wrath of myosin in this world. I use it after, we we treat people for that bio toxin or that infection to help, bring back immune balance or restore immune tolerance, I think is a good way of thinking of it.

Rapid myosin in large doses is used in the transplant community to prevent organ rejection. But in low doses, just like low dose naltrexone, it has wildly different effects.

Without the, the, the same risk profile. It inhibits, antigen induced proliferation of T cells and B cells and reduces overall antibody production. And so this can be really, really helpful in conditions where, the bio toxin exposure a person is dealing with is due to the presence of a chronic latent non-active or carriage infection that like, can't be eliminated completely.

And so the idea is that by giving it for, say, 4 to 6 months, you can break a cycle of immune activation, and help the body reset its immunogenic sensitive tivity so that it has immune tolerance moving forward in the future.

The other side of this, of course, is into the mitochondrial world, which, is a whole different side of the wrapping bias. And, and again, in the anti-aging world, this is where they've really talked about it, but like what's really going on?

Like, what are we really doing with this? And I, I really find a huge amount of benefit for people in, in, in the chronic illness world as well because of what I called damage Done, this idea that a lot of the people who finally find me have been suffering for a decade or more and seeing, you know, a dozen doctors and, and they haven't really recovered.

And so a lot of it is they're structural damage that may have happened at joints or, or, you know, neuroendocrine issues. Or ultimately, you see this, this cell danger response is discussed by Doctor Navya, which is really cellular senescence.

And that basically means that the cells are basically in this hibernation state. They're not, metabolizing. Well, mitochondria aren't being turned over.

Cellular function is impaired. So rapamycin inhibits, a key regulatory protein called mTOR. That is what promotes that cellular senescence and it up regulates Nrf2, to increase mitochondrial autophagy or turnover and, get that cell out of that senescence cycle.

And so, you know, by doing this, we see the ability to improve the, intracellular clearance of bio toxins. We see improved energy, motor function, cell to cell or peregrine function, and ultimately, a restoration of, of the cellular function that can then translate over into, you know, the ECM and improved, you know, everything else in the body.

And so, yeah, so it's a really wonderful peptide. And, and the fact that it's not injectable is appealing to a lot of people, of course, as well. 100%.

Are you doing for those for on the immune side and versus immune tolerance versus sort of an mTOR mTOR side. Are you looking at similar dosing? Yeah, I you know, it's actually an area that I'm looking at exploring a little bit more right now.

Right now it's very dependent on the, on the person. So a lot of the people that I deal with are really, really, really sensitive. So while it might make sense or in theory seem like, oh, we want to use higher doses to, to reduce that sensitivity, the truth is it's usually, a better approach to start slow and gradually work up as we see improvement.

So usually I start off, in the more sensitive people at 1.5mg twice a week. Sometimes we'll go up to three milligrams and even up to five. But again, I sort of touched on this, with you a little bit ago.

It's a project that I'm working on because, at some level, we do have to watch and make sure that we're not suppressing the immune system. You can do a standard CBC and just look at RBCs and your lymphocyte neutrophil counts, but, when I'm actually doing is looking at the lymphocyte subsets and looking at your CD3, CD4, CD8, Cd19 cells and actually asking, are we actually truly suppressing things?

Are we causing problems? Because, you know, we don't want someone to end up with, you know, bacterial pneumonia or something like that either. So I think that there's a realm, of functional addition into the sort of medical realm where we're having to use higher doses, and having to be a little bit more cautious about that.

But ultimately, it's synergize really well with a lot of other things that help that as well. I think I talked really already about it a little bit, but I'm, I'm, you know, I'm a big proponent of using low dose naltrexone.

I think it's it's a huge, asset for a lot of the people provided they do well on it. And it's something I've, I've lectured for the Naltrexone Research Trust before as well.

And also using, thymus in beta for, using low dose immune therapy, using low dose allergy therapy and, and in truth, even using helminth therapy, which is a whole new world of discussion.

Because I've, I've actually found some of the best benefit in restoring immune tolerance. But in those cases, I am actually using a little bit lower doses of rapamycin to prevent colonization.

So then, yeah, I as a tool or as a concept modulating and regulating immune function is sort of what this whole conversation is about. And then as you hear, there's not one exact dose.

And then these are generally things that you cycle on and off of. And so then and and and then we're going to have multiple tools and strategies of modulating on and off of those, to begin to deal with what was going on.

You know, we were talking and I, I thought this would be an interesting trajectory of conversation for people to hear about. When you think about some of these complex infections, there's a question of a is, is there an infection that's out of control that we need to fight and bring down?

Or b are we over here with an overactive immune response to maybe the remnant of an infection, but the infection is not really the priority. And when you said that, I was like, oh, awesome.

So then we have to we have to let's dive into that. Because I think hearing, hearing, hearing about this is going to be an intriguing thing for people to begin to help them understand sometimes what, a diversity of how they feel based on the two of those paradigms.

Yeah. It's a huge topic.

Immune Thresholds, Chronic Infections, and Bio-toxins

And and ultimately, you know, there's this idea that just because we have, a test that shows antibodies to some organism doesn't necessarily mean that it's, something that needs to be treated, in the functional medical world, I think we jump a lot towards the idea of, oh, we got to treat this, you know, infection or we've got, you know, and a, you know, an early antigen for Epstein-Barr.

We've got high CMV levels or we've got, you know, IgG positive results to Borrelia, Bartonella. But a lot of those IgG in particular results are really reflective of exposure.

You know, or past treatment. And, and it's a whole discussion into the world of like, what does that exposure mean? And is sexual transmission a topic?

And I know we're not here to talk about testing. Although I will put in a little plug for doing more on the T-cell based testing. Because I still labs.

Yeah. Yeah, I do a lot with in fact, and, and had the privilege of going to meet Kirsten in, in Oxford in 2016. At the lab there and really have been using, that testing more since then because with the T-cells, we're looking at a cycle that really represents the last 60 days.

Right? So we really can, assess whether something is active versus just present. But ultimately, like in this world of infection or, or bio toxin, like, there's sort of this chicken and egg phenomena that happens.

And this is basically what I describe as the difference between, treating disease and restoring health. Right? Because ultimately there's always some toxic insult that affects, cellular function.

And that can be infectious, toxic, or traumatic in nature. But it all affects the immune system, right? And so when we have, a source of the problem that we can't completely resolve, we see this sort of cycle of dysfunction that happens.

And it's characterized by, you know, the inability of the innate immune system do eliminate this toxic insult, which often causes an amplification of the adaptive immune response, which increases cytokines and inflammation, which further impedes the shift towards and improved innate immune response, which, you know, just continues to to increase this cycle.

So generally, in this kind of chronic fatigue world, that goal is trying to find the right balance between eliminating the antigenic source of the problem by restoring innate immune function and or providing, you know, detox support, anti microbial therapy or whatever, some metabolic support like ozone or naltrexone or, or, you know, hyperbaric or whatever or the other side is promoting and the intolerance like we said.

So this is a topic that I have a lot of fun talking about. And, and spent a whole, lecture just describing this, this nuanced idea of, you know, the idea that every microbe in the body has, that's established itself as either a commensal or a pathogen has a unique threshold at which the immune system reacts and I actually think that there's two thresholds that happen.

I don't think there's one. I think there's an infectious threshold, which is what we learn in medical school. Right. And that infectious threshold is what, what load of that antigenic material, that infection or that toxin is required to, trigger an immune response to guard against damage from that pathogen.

Right. But there's also what I call an immunogenic threshold. And this is the idea that, the immune system is trying to prevent, disseminate. And if something out of an area where it shouldn't be, whether that's in a cell or whether that's, you know, we've quarantined Borrelia or whether it's, you know, a commensal organism like Clostridium that lives in the gut or, or staff that should stay in certain areas.

But there's two sides to that. I guess I'm, I'm rambling a little bit on this topic right now, Matt. But, Yeah, tell me that you've so tell me the two sides.

Yeah. So, you know, it's an interesting thing. And I've got a bunch of graphs, but again, the goal of, of treatment is either to, you know, treat the infection and bring it below the infectious threshold, right, so that the, the body isn't like seeing there's a perceived threat or it's to raise the immunogenic threshold because for whatever reason, the body became more sensitized to the presence of the bio toxin or the infection itself.

And now it's reacting at a level that it shouldn't anymore. And so I kind of described there being for two categories of pathogens. If we're talking not in the fire toxin world, we've got our commensal organisms.

Like I talked about staff and klebsiella and H. Pylori and claustrophobia. And these are things that have high infectious and immunogenic thresholds that permits their presence in the body unless they breach barriers, right, or become really overgrown.

And so almost all of the, hyper reactive responses to these are localized like, like things like acne or ulcers in the, in the tonsils or cross-reactive like we see with pandas or reactive arthritis or rheumatic fever.

Right. And so the commensal organisms is one the other three categories with, you know, I can go into detail, but there's invasive pathogenic organisms that are going to have both low infectious and immunogenic thresholds.

That's, you know, you know, going to be stuff like cholera or strep pneumonia or pertussis or, meningitis. And we've got our parasitic and viral organisms.

You know, Epstein-Barr is scary is blastocyst is herpes. And these have low infectious thresholds. But high immunogenic thresholds. And that kind of ensures that these things stay localized or latent in the body.

So it doesn't get overloaded or depleted nutritionally or metabolically. While also preventing, you know, a chronic inflammatory response to a persistent in a persistent organism that we're not going to get rid of.

And then the fourth organism, is the one I think that we see a lot of focus on right now in the functional medical world, which is these intracellular and cell wall deficient organisms.

So that's going to be, you know, again, Borrelia, Bartonella, chlamydia, Mycoplasma, mycobacteria, cochlea, and these likely have high infectious thresholds but low immunogenic thresholds, because of the unique ability of these organisms to persist.

You know, I'm I'm of the belief that we're not going to get rid of these things. So, you know, the reaction type we see is characteristic of the body's attempt to prevent dissemination in the other cells while minimizing inflammatory damage to already infected cells.

So those are kind of the, you know, the ideas that I, I at least have, you know, bio toxins are it's an entirely different thing, of course, because bio toxins have direct and indirect effects, either, you know, due to their, you know, direct, impact on, fatty structures like, you know, the neuroendocrine system or cell membranes in particular, or due to their, effects indirectly, on you know, on, on the body and the, you know, the pituitary gland, the hypothalamus and, their, effects on changing, those neuroendocrine hormones like melanocytes, stimulating hormone and the IP, and, you know, and how that pulled down stream, cascade happens.

Okay, good. So then let's, let's take a little walk into and make a toxins as a bio toxin and VAP, because that's one of our topics. And this is a topic that's sort of near and dear to our hearts.

So I'll be interested. I'm interested in your thoughts. Yeah. Okay. So again, like combining peptides with either I. V. or oral detox protocols, right.

It's kind of what we're talking about. If we're talking about detox, we're not talking about the tolerant side of things here. And we, you know, and and with the assumption that we all kind of know this idea, there's two sides to the toxin.

You know, one is the direct impact on the fatty structures and the cell membranes and when you have, a toxin that gets into a cell membrane, it, it creates scarring.

But that scarring, as I describe it, is it's not like we think of on the skin. It's it's basically the addition of long chain fats and odd chain fats that basically impair membrane fluidity.

So you get these sort of wax plugs. I sort of describe it as like what coconut oil is like in your cabinet. It's not fluid. Right. And so when you get these longer chain, longer carbon chain fatty acids, we see an impairment of that happening.

And then sort of like what you were asking about is this, neuroendocrine effect. And, you know, how, the bio toxins affect cytokine production by binding the leptin receptors and reducing melanocytes, stimulating hormone in VIP and, affecting all the downstream things from, you know, Aids and endorphins and melatonin production and, you know, the, clotting cascades and all of that.

So with all of that in mind, there are the peptides. It's kind of nice because the primary no endocrine hormones that are impacted are peptides that are available to us.

Mylanta and VIP and, and epithelial and frankly, and and really KP these should be discussed if there's a way to get it any more. I don't know. You asked a little bit about VIP specifically.

So vaso active intestinal peptide. Been written a lot about in the shoemaker world. Obviously it functions as American mediator, as a neuro hormone. It's been promoted for its ability to heal atrophied or damaged areas of the central nervous system, but it also helps to limit inflammation and regulate the immune response.

So it can really be helpful because it does correct some of those inflammatory markers that we see. In particular, I like it when we see high TGF beta one, which is a, which in of itself is something I really have fun talking about, because TGF beta one is sort of a weird conundrum of, a protein marker because it has both anti-inflammatory and pro-inflammatory components to it.

You know, but we know that ultimately chronic elevation of TGF pushes towards that 17 immune response, which is characterized by chronic inflammation and an allergy or loss of immune tolerance and autoimmunity.

So it it really focuses and fundamentally addresses like what we're talking about. Right now for these people. And there are other ways to lower TGF of course.

And assuming that someone's not still in a moldy house, you can use VIP, and and, and bring TGF down. It works for MMP nine. It works for C4. AA I've seen it help.

Address, you know, steroid hormone levels in younger people who are clearly, you know, affected when you see a 35 year old with the testosterone around level of, you know, 250 or 350, you know, you know, that that, more toxins affecting it.

So it can be really helpful in those cases, as well as, you know, the vitamin D pathway, which is a really fun topic for me to talk about as well with, Covid around, like, I really spent a lot more time looking at, vitamin D and the conversion into calcium trial and frankly, the use of prescription calcium trial, in a lot of these immune topics, which I'm going off track here, but, anyway, VIP, it it helps to correct, t regulatory cell, effects and and definitely helps to regulate both the innate and adaptive immune response.

And so, you know, if we're thinking about all of, how these bio toxins affect these, you know, the pituitary and the hypothalamus and everything downstream is being affected, there's sort of a temptation to say, I'm going to treat all the downstream things right.

And that's kind of the sum of the parts is greater than the whole. But why like using VIP and MSH and epithelial and is because you're working more from that top down approach.

You're saying, I'm going to treat and correct the neuroendocrine deficiencies and everything below that should correct. What are you doing? What those are you doing for VIP?

You know, I, I used to start lower, actually. Matt. Any more, I'm usually starting off at like 25 micrograms. She'd, four times a day dosing. But I'll go up to the full 50.

Are you doing a nasal spray? I'm doing it as a nasal. Yeah, I'm still using it. Nasal spray. I, I don't know if there's any injectable forms of doing that at this point.

VIP, MSH, and Other Mold-Related Peptides

I will say that one of the things I see and maybe it's more Milana tan specific, is you can get sort of, a sympathetic neurologic reaction to some of these, when they're used injectable.

And maybe you've noticed that as well. Milana Tan in particular. I've really found it to be super, super helpful because, I mean, Milana Tan is alpha msh.

It's basically the primary hormone that we see affected in that Shoemaker cascade. But, I think it probably does trigger histamine reactions in a lot of people.

Which is why I said to you, you know, whenever we're talking about, the use of peptides in the bio toxin world, I think cGRP needs to come out because, Cfpb is basically Mylanta ten minus that carboxyl terminus.

And so it, has an oral availability, and it doesn't trigger the histamine reaction that I do see, with Milana Tan and, and and not say, I don't use a lot of Mylanta because, because I do.

And I think Cfpb probably also has some anti has some histamine calming effects also. Right. It does. It has a quite a bit of it actually. Not quite as much as like and OCS which is another one that we as far as I know can't get right now.

You know, I think, it's all kind of esoteric as far as where and, you know, I think I know all the sources and then, you know, I'll talk to a colleague, I'll be like, oh, you know, like there's think about this place as well.

So, you know, it's something that I'm trying to keep my eye on and, you know, what's available to us. But yeah, Cfpb does have antihistamine effects as well.

Do you? It do you ever see people react to how how often you see negative reactions from vape Viper? If you start someone really high, you can definitely see negative reactions.

I mean, there's no question, you know, some of the reality is you do need to monitor, you know, pancreatic lipase and in particular, like if, so VIP is primarily going to be produced by the pancreas and then secondarily by, you know, in the brain, in the pineal, I mean, in the pituitary, but because of its ability to affect, pancreatic function, I have seen, upper left quadrant discomfort happening or GI issues.

So I do tend to screen primarily for people who have had a history, chronic alcoholism or pancreatitis, and watch them and maybe start a little bit slower, but other than that, I usually don't see too many negative responses to it.

And then tell me you in kind of parallel to those things. Your thoughts on Apatow on, in terms of, in terms of this

side of the conversation? Yeah, I mean, this Alan's an interesting one.

You know, I just cry about this, Alan is a peptide that you don't usually see a lot of subjective, you know, benefit or noticeable outcomes with it. Typically, it's something you kind of have to trust.

Is working in the background. And at least that's been my experience. Maybe you've seen that it's something I've taken for quite a long time and I don't maybe I notice some things, but it's a pineal peptide and it's one that we know decreases with age.

And so typically by about age 40 we see, you know, a pretty significant reduction in epithelial. And as the pineal gland is not working anymore, and, and I think it's, it's just not known very much because we don't really think of the pineal as doing much more than producing melatonin and, and being a surrogate marker on an MRI.

You know, because it typically calcified in Western populations. But, you know, epithelial and has known benefits with metabolism, with increasing, sensitivity of the hypothalamus to hormonal feedback, it helps to normalize function of the anterior pituitary and it regulates can add atropine levels, melatonin and serotonin in particular.

In the immune world, it's something that, you know, there's just not a ton of data on it, but there is some information that shows, helping to normalize T-cell function.

Something that's a little hard to measure, honestly. Reducing uric acid and, possibly improving pancreatic function. But, generally as one of the sort of upstream, neuromodulators or bio regulators in this sort of bio toxin pathway.

I think it synergize is really, well with MSH and VIP, as well, frankly, as some of the thymic peptides to, help support long term recovery for people who've dealt with, you know, a bio toxin.

What dosing are you doing? Yeah. So I'm trying to think so. Point three mk GS every three days or point one, I want to say, I have to look I want to say it's a 3000 MC per mil.

So I want to say we're looking at, about 300 micrograms daily or 900 every third day, depending on, you know, patients willingness to stick themselves.

Okay, good. The, the, and then the alpha msh you're using your, you do you have a are you getting alpha msh the, how much are you doing with that or. Tell me about that.

Yeah. So I mean alpha msh is Milana Htn, right. And, yeah, we, you know, it's, Milan and is is, I mean, it's a synthetic alpha msh, okay. And I mean, yeah.

So I mean, it's, you know, Milan often two anyway. And, and I will tell you there was Milan at un one for a while, which, didn't have the greatest success with because the histamine response, you know, we can go into the whole details of MSH, or, Milan often, but the primary, the primary issue with Milan often is it causes tanning, increases melanin deposition, which is not always desirable.

And everyone, so a lot of times what I do, I'll start off with, you know, something like 200 makes daily and maybe even increase up to 500 micrograms per day.

For somewhere in that 6 to 8 week zone. I kind of think of it as like priming the pump right? You're kind of getting the, effects of melanin tan and ideally sort of opening that pathway to all those downstream, issues.

And then usually I'm going to try and reduce doses down to somewhere around 100 to 150 mix, every day or, you know, 250 micrograms twice a week. Which tends to work pretty well from a maintenance standpoint.

Without like continuing to, to darken the person. You know, the biggest I think, concern that that we hear about Milan often is are we increasing risk of melanomas or, you know, skin cancer or actinic, you know, issues.

And, it doesn't really seem like there is any data to support that issue, but it does take a while for someone to kind of come back to, you know, their normal skin tone after, discontinuing it.

But, I, I mean, I found it to be huge. I mean, Milan often increases interleukin ten, which is kind of, a cytokine. I focus a lot on and, and, and, you know, whether, again, it's in the helminth world or in the, homeopathy world or in the, you know, you know, and the peptides or whatever, because, IL ten increases, Treg cells.

It kind of has that opposite effect with IL 17 and that, that T 817 pathway, due to its inhibitory effects on IL 23. So there's kind of like a crosstalk that happens at that point.

But it does upregulate IL ten. And there is some really cool data on, on, on Melania's hand, anti-inflammatory effects. And, you know, they've shown in models of IBD or R. A or even, LPs induced, you know, fevers and inflammation, where in lab models where they're finding, you know, McClanahan has anti-inflammatory effects similar to, prednisolone without the side effects of immune suppression.

And, and we also get that improved immune tolerance by up regulating IL two. So or I mean IL ten. So it's it's pretty cool stuff. You know, and, and, you know, I tend to like using it, especially when we see high MMP nine levels along with low MSH, and, you know, and, and we know there's not a histamine component in there.

You know, the corollary, of course, to this is k pv. And so, you know, if someone's MSH level is measured in, you know, it's less than eight, which is undetectable, then I'm usually going to go for a mylanta Tanner I'm going to recommend it.

There's a sort of gray zone I kind of described between 15 and 25, where sometimes it helps, at lower doses. But once we get above, say, 20 ish, I, I was I don't again know where to get KP v right now.

Now that you know Doctor Holdsworth in the integrative peptides isn't, isn't have it. And this is my plug to you can is, you know, I'd use kp v as an alternative because it still has all that anti-inflammatory benefit without, the full neuroendocrine effects of Mylanta ten.

So we still see suppression of NF kappa B and TNF alpha, while up regulating IL ten and and it's kind of like you mentioned, CP v also has anti histamine effects, but it also has some interesting, anti microbial effects as well.

So in cases where we're thinking that the, the, the offending issue might be the presence of, again, some carriage infection or a latent organism, KB might be a better choice, in fact, than in the mold world.

100%. And then explain can you explain the the MSH mold idea, the idea of of why that goes MSH goes down in the presence of mycotoxins? Yeah for sure.

Okay. So msh so MSH is basically produced, in response to leptin binding to leptin receptors. Right. So when we have bio toxins, we tend to see, those bio toxins binding to those leptin receptors as well.

So it, when it basically blocks the ability of leptin to bind, which inhibits, in fact, the production of MSH. So, when we see, MSH reductions, it basically again, it has sort of this whole downstream effect, on, on, you know, everything from, hormone production to, you know, you know, adrenal function and sleep disorders and chronic inflammation and chronic pain and, vaso constriction, but yeah, I mean, basically, I so I guess what, you're probably wanting to know it, like, I'm trying to think of, like, how best to explain this.

So certain people have, they lack the receptors to recognize bio toxins. So I kind of alluded to this earlier when I said that bio toxins have direct and indirect effects.

So in the indirect world, bio toxins are normally, going to be sort of phagocytes ized or, consumed by our innate immune system and our antigen presenting cells.

Then those APCs are going to need to present that bio toxin to, a naive CD3 cell, right, a T lymphocyte. But what

they found, at least if you look at shoemaker's work, is, certain people lack the HLA proteins on those CD3 cells to basically recognize that bio toxin.

Right. And that might be an oversimplification. I mean, a lot of that data is, is is relatively dated at this point, but it it still seems like there's some, some good data on it.

So when you have the inability to, create antigen specific CD4 cells because that CD3 cell can't recognize that, that, that, that bio toxin because it lacks that HLA receptor.

You, you see, that bio toxin basically persisting and being relying on the innate immune system and it basically will bind to that, that leptin receptor.

And so these, these toxins create an innate immune inflammatory cascade by binding to toll receptors, which are present on all the body. And and because of its inability to produce antigen specific recognition, you get chronic cytokine productions that, you know, further disrupt this whole hypothalamic pituitary issue.

You know, aside from, from that, from from the, you know, binding of the bio toxin to the left and receptor is that kind of 100%. That's awesome. So then.

So thematically, then if we were to kind of go through this conversation and I'm glad that you brought up, you know, in fact, our labs and all of that stuff, I love them.

Yeah, I'm glad we're talking about testing a little bit.

Long COVID, Vitamin D, and Immune Support

And because clearly, what, you should your take away from this is this is nuanced and complicated, and sometimes there's this upstream thing where maybe we have the lack of some proteins that creating downstream inflammation, like, for example, MSG.

There could be infections that we're having an immune reaction to. There could be bio toxins that we're having an immune reaction to or not. And it is really the and our immune system may be active or not fact not active enough appropriate to active or not active enough.

And then within the the things that are in us, there's these sort of four categories. And then probably a lot of people have a little bit of all of those categories of infections because we have a virus and a microbiome, and getting a exposed to all of these things.

And even I find in my practice, a lot of times, if you have two people that live together and one of them, they have the same test thing and one of them has a lot of symptoms and the other one doesn't.

Yeah. And it's all intimately associated with how your guts working. So then basically then the idea is to have a thoughtful way of working your way through, trying to diagnose what's going on and then trying to work on treating these biochemical pathways.

And then we've got supplements, peptides and other things. But then basically. Almost the most important thing, I think, is building a clear model of what you think is going on at a high level and then strategically working our way through these things.

Yeah, I completely agree with you. And, I think that better testing is helping a lot. You know, you kind of mentioned, you know, the world of testing for infections and like the T cell tests, which are really great because they really do help to delineate that issue.

And, I, you know, I, I have a lot of pet peeves around some of the providers, and I shouldn't say Pepes. It's really not that, I shouldn't say judgment either, but, it's around like treatment of, you know, like, do you really need to treat

something for three years or five years or seven years and like, what are we doing when we do that?

And and I mean, I'm, I'm guilty of it. Like, I mean, I've been doing this for 20 years and I'm not going to sit here and say, I haven't had people on I. V.

antibiotics for, you know, a year or more or I haven't done this for some of this, but having reflected on things at this point, it's it's really not what I tend to do anymore.

And so some of the testing really helps a to identify that. And B to find out, like if it's not working, it's probably not that you don't have enough antibiotics on board.

If you have, you know, a few things or you've got a bunch of herbs, it's usually that the immune system is probably not working the way it should, or there's some associated bio toxin, or maybe there's some structural issue, maybe it's related to, you know, again, a hypermobile issue, or maybe it's an emotional or, or, you know, something that happened in the past that affected the limbic system.

That's creating all these, like, you know, other issues downstream. So, yeah, the T cell tests have been helpful at distinguishing resolving infections versus active ones.

But in the immune world, there's some really cool tests that have come out as well. And Covid, I think is frankly been a huge asset both towards the, you know, the more mainstream acceptance of T cell testing, as well as our ability to further look into the immune system.

I mean, I talked to you a little bit about lymphocyte subset, which is really about as far as we can go with quest, other than looking at total immunoglobulin levels, which is valuable certainly you'll find people who are low, but what are you going to do?

What do you do if someone is like at 500 on their IgG, they're lower than that 610, but they're not going to qualify as kids. So you're not going to give them subcu IgG levels.

Right. So there's this whole gray zone in that you could test natural killer cell function. As well, which is helpful if you live near the lab. Right.

Because as soon as that T cells out of your or those NK cells are out of your body, they're kind of withering. But, like I said, there's better tests.

I'm, you know, I don't know if we, you know, if we want to mention specific labs or vendors. I guess we've already talked about, in fact. So but, six has a great lymphocyte map that I found to be somewhat helpful at identifying one.

And two and, and looking at, 17, which is, again, you kind of heard me like I'm really kind of obsessed a bit about that topic. As well is, you know, looking at natural killer cells and all of that.

And then, Bruce Patterson, who I think you're going to be talking with here coming up, you know, he's done a lot with In-Cell DCS two in the, in the long Covid world and looking at this monocyte polarization, and, and all of these, you know, individual cytokines and, it's an area that I'm, it's kind of literally the cutting edge of where I'm looking at right now, trying to assess, like the utility of doing those tests and how good are they?

Because, you know, as you know, Matt, like, cytokines in your knee are going to be different than cytokines in your blood and is going to be different than cytokines in your CD4.

Like, so it kind of depends on what we're looking at. But it, it's certainly providing a clue in terms of how to direct treatment and what to do. In addition to doing, you know, clinical interventions.

Yeah, 100%. What, what's been your experience with long Covid and the installed testing and what and what are your thoughts? Yeah, I mean, honestly, I haven't done a lot with it.

We're just sort of starting into that world. With long Covid, I, I would be remiss not to mention, Mark Cooper of at, University of Washington, a professor emeritus up there who's done so much work on this topic.

And really, you know, developed a really neat model. And I think you heard me talk a little bit about, vitamin D, and I could easily get off topic on this.

I'm going to say it's a good topic. Yeah. Because one of the things we see, I mean, we know about this monocyte polarization, this idea that we've got sort of like monocytes full of spike protein that aren't dumping their load and remaining in this, you know, M1 state.

And how do you convert them back again? And, there's also this observation with Covid that we're seeing a lot of, reactive ation of chronic viral infections, in particular Epstein Barr.

It's really interesting because vitamin D, like, it's it's one of those things you learn in medical school and you kind of go, oh, that's simple stuff.

Take your 5000. I use a color calcifer all or D3 every day. But it really doesn't stop there because D3 as we call it, which is really cool in Calcifer all that we take gets converted in our liver to calcifer die, all right.

And that's like really transitory. It doesn't last very long. And then that gets converted into a trial or 125 die hydroxy vitamin D in the kidneys. And all we've been taught is providers is like, hey, look at this.

In cases of chronic kidney diseases, look at this in, you know, in, in transplant patients and maybe in some of these really severe osteoporotic cases, because of the trial's regulation for calcium.

But what's interesting is, Covid, and Epstein-Barr, upregulate something called 24 hydroxylase, and 24 hydroxylase is this enzyme that impairs conversion of calcified dial in the calcium trial.

So instead of making 125 di hydroxy vitamin D, your body produces 24 or 25 de hydroxy vitamin D. It's sort of like reverse T3. It's an inactive form of vitamin D, and the only lab is testing it is Mayo Clinic.

And you can totally do it. It's really cool, actually. And you'll start to notice in these cases where you see this profound fatigue in these, these long Covid cases, you know, and, and lack of recovery and you, you, you assess not just, 25 hydroxy vitamin D, your standard vitamin D, but you look at the full vitamin D profile, you look at the 125, the 25 and the 24 to 25 levels.

In addition to, say, a chronic viral panel, you know, with whatever lab core or vibrant or something like that, you'll see that often there's a match with this, you'll see that, there's an upregulation of that 24 or 25 hydroxy D, there's an, an imbalance because you'll see a low level of, 125 active calcium trial, and you'll see high viral levels.

And so, something like I said, that I don't see anyone talking about, actually. And that's why I, I wanted to give full credit to, to Doctor Cooper. Is the use of prescription tells trial and treating long covid and I have really I can tell you I've had great success.

I'm. Well, what dose are you using? Yeah. So it depends. So for acute Covid, we'll go up to, a milligram a day for, call it 7 to 10 days. And there is more data on the ability of, either calcified diol or D2, or Khalsa trial in preventing, you know, serious, you know, death or progression to ventilators in an acute Covid, right?

Tons of really interesting data on that. A lot of it coming particular case in the Spanish literature, but I, I literally have a library of this now, as far as the long Covid, where I'm, I'm usually doing.25, micrograms, bid for, 8 to 16 weeks.

You have to really be careful. It's not something that I would advise be like, just, you cavalierly do it because you can, create hypercalcemia, and we know, there's a lot of things that go into calcium regulation, especially in the cardiac world.

So, if you do something like that, you need a measure of parathyroid hormone, you need to measure phosphate, you need to do 24 hour urine calcium levels.

You need to look at your metabolic panels. And you also need to make sure you're, you're not, suppressing conversion on the other side. So you're usually having to do both.

And then there's the other side of things, which is like this whole topic that we're having that which is, you know, these patients who have persistent chronic viral issues or a persistent Borrelia or whatever.

And you're like, I need to upregulate your innate immune system. So, I'm actually finding that using, 0.25 mgs, calcium trial, with cal, cold calcifer all or calcium for dial one of the two and getting those numbers matched.

You got it with all the lab testing. I said, has been hugely, hugely, useful. Because zinc and vitamin D, in my opinion, are probably the two most important, co-factors involved in supporting a healthy, innate immune system that's designed to eliminate a persistent infection.

Or put the genie back in the bottle, as I call it, when we think of things like EBV or CMV, because I don't know if you're like me, Matt, and you've tried every antiviral in the world, you know, if you've tried, I mean, I've tried, I've been like, I mean, you know, and nothing works long term in my experience for EBV or CMV.

You know, I, I think there's some I think there's more to be said in the, world of treating, the immune system. And Paul Cheney really had it down years ago when he was dealing with chronic fatigue syndrome and using, you know, Cuda press and, and things like that to upregulate that same immune issue.

And I think that's really what we should be focusing on because the world we live in now with, you know, all the bio toxins and all the things we're releasing and the recognition of mold toxin and who knows, there's electro smog and things like that affecting all of this.

I think in terms of sort of 21st century medicine, the focus needs to be moving more towards supporting, healthy immune responses in terms of preventing cancer, in terms of reducing the likelihood of neurodegeneration, in terms of all of these things.

That's what I believe the focus should be. I would 100% agree. And the interesting thing, that's the thing that'd be like if you said that there was somebody knew how to fix EBV in Africa, I would get on a plane right now and fly that out and cancel my week to to figure that out.

But, but, but but basically the only thing that I've ever seen be very helpful is regulating and fixing and balancing immune function. And basically raising the, the, the sea level of health.

And, and then that, that basically and that sea level as a kind of a tide that it's actually coming in and out. But but to the extent that you, you balance immune function and then and, and then the immune supporting peptides, I think have been helpful and that and that category as well.

I, I agree and you know the two the two peptides I use in a lot of these cases where I, I still see residual active infection, I miss alpha one and L 37.

You know, I, I love I miss an alpha line, but I mean, you're talking to a guy who's been dealing with, you know, the treatment of tick borne illnesses for a long time.

And, you know, its ability to, upregulate, the innate immune system and T-cell function and improving T one conversion to sort of reinforce that cell mediated response is the important part in dealing with these types of infections.

So, you know, personally, I find, to one can be really help to improve cellular membrane detox as well as treating active infections, that the body hasn't been able to clear, like in Lyme or EBV or C pneumonia.

I've seen it work at improving m k cell function like we talked about. It augments antigen presenting cell signaling. And so it can really be useful in particular in combination with other antimicrobials, whether that's, you know, Western, prescription medications or, you know, herbal therapies.

I find it really helpful. And, and in the immune modulation world to one, I've seen it really helping in some of these sort of t two dominant conditions, like, you know, chemical sensitivity or lupus or chronic fatigue syndrome or, that sort of a topic triad that you'll see with eczema and asthma.

I've definitely seen benefit from that as well. And then, l l 30 7LL 37 another one. I mean, again, I talked to Mark about this. It's really interesting.

If you've ever gone to even just Google Scholar or PubMed and typed in L, L, 37 and Covid, really, really, really interesting stuff there.

Gut, Phospholipids, and Closing Thoughts

Because there's a lot on l l 37, being the primary, or one of the primary, focus is on, the cell mediated immune system's ability to get rid of these things because, you know, l l 37 is naturally stored, in neutrophil granules as, inactive precursors.

And it's released, I mean, it's active form, when neutrophils are stimulated. And what's really interesting is production is stimulated by vitamin D, which is really cool.

All the way back into this discussion around how do you support an effective innate immune system. And so we just created this really cool cycle. So yeah, I mean, and in these, you know, these active Covid cases or these chronic viral things, I do like using, T-1 and l l 37, in these cases with prescription vitamin K to trial and, you know, and, and sometimes other things, right?

Of course, like, you know, all the armament of things like, you know, major Autohemotherapy or, or herbs or whatever it's going to be. So, yeah, I they're I had this great lecture that I went to years ago from a Hopkins professor that was talking about the, an analogy for and I mentioned this on another.

But, an analogy for neurological Lyme was drug resistant TB. And so then the idea is, is that for drug resistant, resistant TB, there was an antibiotic bottle, which would be like for antibiotics.

Yeah. And so then I said, well, technically we're kind of having the same conversation, but like two antibiotics as the LOL 37 and to want you know, and the B, you know, hypothetically, you know you ozone could be want and then and then vitamin D from a certain perspective is almost one.

And so then we have all of these and then herbals maybe have a couple or both, but combined that might add up to one. And, and, and you know, there's, there's people who really believe a chance to kill is the chance to cure.

And and so then that would be more of a on an antibiotic side. But then if I was to put the whole conversation together, I think the you're managing that thought process with the immune regulation process.

And I would agree at, at a high level, you know, the capital and, and, you know, there's both some injectable and, oral versions of kind of the bio regulator peptides and, you know, one, one idea that I just want to maintain, like a long term conversation with you around is the, the from a pineal peptide, you've got pineal on and Patel on and quarter Jones and another sort of neurological bio regulator.

But so then to begin to think about them as a possible alternative to vape, particularly for people who are reacting to VIP. So I had this whole conversation with Paul Taaffe and, and interestingly, putting MMS, putting Cfpb in there.

And so then I think that there's going this next year or two is going to be an interesting sort of journey of regulating in and around message and those pathways in the brain, which are basically to some extent at a epigenetic level,

putting that genie back in the bottle in the sense that at a at a from a transcriptome perspective, we're, we're printing kind of inflammatory genes.

And that may be because the message is low. And, and yet, if we could start to balance that and then and the nice thing about Cfpb is it's easy to take, you know, the the melon often does cause nausea.

It does sweating. Right. Yeah. Yeah. But Cfpb makes people feel better. And so then kind of strategically there's and this goes back to kind of the overall arc of the conversation.

We have all of these levers to fall. And COVID's involved. Chronic viral stuff has involved. These self infections are involved. Actual thug killer infections are involved.

And kind of managing that managing all of that and managing symptoms and then doing things that help people feel good just to get them on the journey.

Yeah. I'm I'm curious, do you have a source? It can't be me these days because I have about 100 patients that would, like, claw their way to you. Right now if they knew that there was something.

There's, there's, there's a it's challenging. It's challenging. But they're probably some options. They're probably some options. Are you tell me, you're using Cmax a lot.

I am, yeah, I do use Emacs. I've really I've mostly been doing Cmax, as a nasal spray and, I have somewhat recently started to explore a little bit more in the injectable as, which I, I actually feel like is helpful.

But yeah, I mean, it's another Mylanta. Horton, peptide. Right. So it's sort of in that same category of TPV and MSH and, you know, especially, you know, when there's cerebrovascular issues or, you know, there's some concern around impaired circulation under the brain.

I think it can be really helpful. I think one of the issues I encounter with Cmax is, I want to use it in higher doses because I tend to find that more often, you know, especially in these neuro inflammatory scenarios, can be really helpful.

And I, I really encounter a price barrier for a lot of that, for, for many people because, you know, doing, you know, say 6 or 8 sprays a day, I think works great for a lot of folks.

And they really notice the benefits of it, in reducing inflammation. I mean, one of the big topics, I think, in all of this is like this blood brain barrier, right?

Like we have like, like getting things into the brain, whether you're trying to treat an infection in the brain or you're trying to remove something, it's like a very protected area.

And, you know, even like you're going back, you know, when when you were just discussing the neuro breathlessness or the, you know, the Lyme in the brain piece that you just had the analogy to with, drug resistance, TB one of the interesting things I found and I found this data from, you know, Brian Fallon, one of his publications from, I don't even know, probably over a 15 years ago, from Columbia.

And it just came up again, with, Tulane, I think, where they talk about dead bacteria or dead Borrelia being much more antigenic than live ones. Right.

And so, again, you know, kind of bringing this full circle to what you were saying, like asking yourself, like what? What really is the priority here?

Is it really that there's still an active infection, or is it just that you're dealing with, a need to reduce that antigenic load and or restore metabolic or neuroendocrine function to the brain?

You know, and, and, you know, and so that's where we get into phospholipid exchanges and all kinds of other things. But, yeah, seems like along those lines, I, I will find that, sort of the phospholipids and, you know, you can, you know, whether you're thinking from a naive perspective is kind of an interesting one.

Yeah. I mean, we do it both ways. You know, orally, as long as, you know, it's well tolerated and you, you know, depending on how much you can absorb. But, intravenously, we've seen a lot of benefit, there's no question, you know, and, you know, it's kind of like the plaque X model or essential or a force title colon, but yeah, using it with, glutathione on and using it with, you know, butyrate at some times and you know, Luca moran and all of that.

So have you, are you doing Fennel Butyrate IV? How's your experience with that? I think it's huge. I think it's awesome. It works great. I mean butter aids another one of the like I'm really focused on the gut these days right.

So like you know in terms of my sort of genesis through medicine, you know I sort of like look at the infectious world as like, okay, I know, I don't know that I can learn much more on antibiotics or antimicrobials anymore.

So what else are we? We looking at? And so the immune piece is really the bubble that I'm focused on, which brings us, you know, into the gut especially and, and and dealing with that.

And so, prebiotics and post biotics are a big one, you know, long back way of saying, you know, butyrate, right. So butyrate and just orally, probably the one of the most important things in supporting the T regulatory cells, because 85% of our, our T cells are in that gut associated lymphatic tissue.

But I. V., which is what you're asking about. You know, beta eight, has great penetration into the, the CNS and, a lot of the best data on that is on, looking at ceramides or this idea of, long chain fats that we talked about, or on chain fats that form as these sort of wax plugs in the brain.

You know, and the evidence that the you know, butyrate is actually breaking down, these long chain fats and helping to restore membrane fluidity. And, we, we definitely see improved cognitive function.

And, you know, we'll do, Moca tests or we'll do promise Nineteens here to sort of assess for, you know, the chronic fatigue world or the cognitive function piece.

And we'll definitely see improvements just by doing, I. V. phospholipids with, you know, butyrate and, you know, we, we can get into fairly, fairly high doses in some, some folks. So, yeah, I find those, you know, it's interesting, a lot of people will say, oh, well, sudden the world just becomes a little more clear, almost.

Crystal. With the faster cell calling and then word combining the phosphate, I'll call in also with a, with other, you know, IVs and that brings me back to, I think both of us, we've never met each other, but we're doing very similar approaches.

And very similar, with a lot of things that are just balancing and supporting immune function. Like my entire as I, I have about 18 things that I drink every morning, during all of these podcasts, which is amazing because they just bring one thing after another.

But it's all just health oriented, you know? And so then I like to tell people I'm just kind of project manage the gut as a thing that we do. That is just something.

And, and in a way, project managing, the neurological pathways project managing these biochemical pathways and optimizing and supporting them. We've got antimicrobial.

We've got to kind of balancing things. We've got regulating things. But it leads me to listen to you because I, I agree with everything that you said.

The long Covid pieces are interesting. And so then, we and then, basically, yeah. Just for people to know, I got a list of things that I was supposed to talk about, and we only covered, like 20% of it, which, I mean, and then next

month, I would love to, have you come on the bio reset podcast.

And we're just going to start a little regular conversation about some of the stuff, and, and then, try to keep, making the world a better place. Thank you for being who you are.

You're you're an amazing doctor. And, I'm super impressed and grateful to talk to you. Been really great being able to talk with you, Matt. I'm happy to share all this information. I'm.

You know, I'm of the belief that, you know, not just what I can do for the for the people who come to see me, but as much as I can help to educate other providers and help to sort of shift people in the right direction, I think we're doing good medicine and going to help a lot more people that way, and I think this is all just knowledge that should be shared.

So, I'm grateful that you're doing these podcasts and, and these summits as well because I, I hope this starts to change some of the paradigm in medicine and how we deal with chronic issues.

And yeah, this, this just, this is if you're listening to the future. So, welcome to the Time Machine. Thanks so much. Have a, have a, have a wonderful week this week.

Thanks, Matt. Great talking to you. I look forward to coming back for sure.