Strategies to Upregulate Autophagy to Maximize Peptide Therapy Benefits Transcript

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Guest Introduction and Credentials

Hi, everybody. Welcome to the Peptide Summit. I'm actually super excited to introduce our guest today, Doctor Kelly Halderman. Completed a family practice medicine internship with the University of Minnesota.

She also has a natural graphic medical degree from Kingdom College of Natural Health, where she is the current academic dean of students. She holds a certificate, Certification of Metal Genetic Nutrition and certification from the American Functional Neurology Institute.

We took that same certification together. I found that to be very helpful in terms of thinking about complex neurological problems, which is something that you know a lot about.

And I loved our conversation, so I can't wait to get into, that side of things. She's an active member of the American Academy of the anti-aging, medicine, president and founder of the American Association of Nutraceutical Formulators, and as a member of the American Medical Association, and works on the Physicians Committee for Responsible Medicine and Society.

Physician entrepreneurs. That sounds pretty good. She has a doctorate of clinical nutrition and is board certified in clinical nutrition. And, has a certification in plant based nutrition from Cornell University.

And a health coaching certification, from the Institute of Integral Nutrition. Her interests include proper detoxification, cancer Lyme, of which she as personally experienced and recovered from, as well as regenerative therapies such as those on peptides and stem cell therapies.

In addition, she's the coauthor of a newly, published book entitled Thyroid Debacle. She lives in sunny Minnesota. Yeah. What temperature is it going to be tomorrow?

Zero. That's the way you do it. I remember that people always used to say when I was a kid, I always. It's pretty warm. It's, It's like 18 degrees. Oh, my. Yeah.

So we both grew up near the High Line. And, in Minnesota, she has her own clinical practice and serves as a director of research and product development for professional health products.

And Randall, optimal nutrients. So I'm delighted to, have you here for, a fireside chat at my house. Awesome. I am so happy to be here, doctor. So thank you so much for having me.

Yeah. It's gonna be great. So then tell me. I know we had, a little delay talk. Something. Something happened to you, and so we had to reschedule. Today's a couple days after Christmas.

What happened? So, after I returned from a fabulous, educational experience at a forum in Vegas in the middle of December every 2021, I came down with a nasty case of Covid.

And I am a I'm a sure I like to share things. And so I gave it to my whole family when I got home. I just you share the love it took. It took everyone down, in my entire house.

So thank you for rescheduling. I was, pretty sick, but my story's really interesting because of the topic. Because this is the peptide summit, and I used I used a lot of different peptides.

I got a lot of, guidance from really great colleagues such as Jim Lovell on getting myself over Covid really fast. And

I will attribute the the peptides I used, to to really helping me recover and my family recover.

Although, I didn't, you know, like, my kids weren't really that sick. It was just my husband and I were pretty sick. So, really have to thank peptides for that.

But yeah, I like Jim, a lot. Tell me what, what what protocol did you use to maybe start? Tell me what what sort of symptoms did you get from Covid? Sure. So, I got home on Sunday and Monday started to feel a little bit achy and just kind of had a little bit of malaise and I went to bed that night and woke up in the middle of the night with a pretty significant fever, which honestly, I was pretty excited about.

I don't know about you, but when my body when my immune system's healthy enough to kick off a really nice fever, I was almost cheering my body on, so I did.

I did feel rather terrible, but at the same point I was I was not suppressing my fever because, that's one thing that I really want to drive home is that that was an important piece, is that I wasn't taking a bunch of Advil or anything to, like, suppress the fever.

I had a raging headache. You know, I was just. I had some mood changes, which was like, I was just really, like, angry just to be on. And I think it was my brain was so inflamed.

And we knew we know that Daniel, Amy was doing some before and after Spect scans. And I've actually had a Spect scanning shows that Covid is more affecting the limbic system.

So, it lasted about 2 or 3 days. I was, you know, I was throwing the kitchen sink at, what was going on. And peptides that I did use, I used to one I used before, I used bpc, I use l 37 and, I also use, a fragment of the TV for when I ran out of a TV for ABP one.

I want to say, for maybe 5 or 6 days, I use high doses. And then after that, and I think I was about symptom free on day five, I just continue to for another two days.

So that was my regimen. Okay, good. So then take me through what? How many melon. What dose of BPC did you do each day?

COVID Recovery and Peptide Protocols

I have to I have to look that up. I would have to look up the exact doses. So I'll, I'll go through I'll tell you some of the dosing that it's interesting some people will take.

So then BPC normal dose might be 500 micrograms to one milligram. And then a lot of people I'm hearing will take, you know, maybe one to 1.5mg a day. And I've heard people taking up to two milligrams a day for Covid.

Pretty sure I took one milligram by 80. That's that would sound perfect for the to one. Do you remember how much you took at that? I'll run you through all of my dosing that I've heard of.

Rate. We, you know, the range will go from 2 to 10mg a day in divided dosing. And then, you can do IV infusions of 2 to 1. And I've seen that be quite helpful for Covid as well in the ballpark of five milligrams, in a slow infusion.

And then if you do that in the afternoon, do some, one in the morning at night to add up to a total of ten milligrams. Some people don't have to one. And then and if they have if they do high dose to one, I have them do low dose TV for like 1 to 2mg of TB.

For if they do no to one, then I'll have them do high dose TB for in the ballpark of 5 to 10mg of TB for and then the the dose for all 37 is hundred micrograms twice a day.

That's what I was. Okay. Perfect. And so then, did you get much of a pneumonia? No, I did that. I was nebulizer

and hydrogen peroxide. Iodine. The minute on Monday when I started to feel ill, that could have been a part of it.

But I didn't have any lung involvement. Okay. That's amazing. So then that is so a you had a fever. B you took all the right things and then C this is this sort of new conversation that's been coming out, you know, over this last month, which is that we need to probably wash our hands.

But more importantly, we got to do a lot of hygiene, you know, mouth washing and nebulizer thing and kind of protecting those upper airways because it sounds like basically you prevented it from getting getting into your lungs.

I will say that 100%, that is that I also made my poor husband go get before he had symptoms. He didn't have asthma. I said, go get a neti pot. So he went and we did.

Everybody in the whole house did neti pot rinses with the same solution. And I, I really do credit that to, you know, keeping with keeping my lungs healthy, that we had to keep these cavities and I was gargling with it.

Yeah. So I totally agree. Which solution did you use in the neti pot? I use, normal saline. With, I think 12, 12%. I have a little table that I was using that I was using to draw everything up, and then I would just put a drop of iodine in there.

We talked. Yeah, that's a great, that's a that's I'm still doing that because there's still flu out there. Right, right. Yeah. So then this has you nailed it, which is super awesome.

That goes to show you that, you know, that's one person affected three. And I think that, you know, that may be an indication that that was Omicron because it's so contagious.

And I'm hearing I've heard this story like a hundred times in the last week and a half of, oh yeah, somebody got it. And then they were really conscientious and careful.

And then everybody in the family got, like, I can't tell you how many times I've heard that. Right? Right. I have a 16 year old daughter and you know it.

You know, she spends 99% of her time in her room. And I had very little contact with her whatsoever. And she she actually tested positive as well. So I do believe that, yes, that we have the Omicron variant.

That's interesting. Well, we're going to talk about Covid a little bit later. But tell me, you know, you have very it was that was awesome to read your bio.

And I it's also awesome for me that, we have, in our journey, gone through some of the same certifications and gone through some of the same study because I think probably by talking to you, I realize, boy, we probably agree on a lot of stuff and think about things similarly.

Tell me what happened and and that started you on this journey from being a straight laced, primary care doctor into learning all of these new, interesting ways to help people.

Yeah, well, it really wasn't my plan. I absolutely loved, the practice of medicine. I was doing well and very successful, and, you know, I was able to match up symptoms with medication pill for every ill.

I mean, like, I was on my A-game, until I myself became very ill. I was on call when I delivering a baby and I remember having a giant scrotum. Toma. Out of nowhere. Now, if you rewind.

At this time of my life, I was a collegiate level athlete. You know, I'm still in great shape. I just birth two wonderful, healthy babies. I mean, I was very healthy and just in a period of a six months, I got really ill.

And so the the crescendo of that was delivering this baby, not being able to see, having to grab my nurse to to

catch this baby and thinking what is going on with my health had.

Whereas at home I tell them let us go home at home. So homework of, of of a migraine. And some people that you'll get a flashing, blinding light in one of your visual fields and depending on where it is, it can almost blind you.

And so this, this flashing light, like someone's running a strobe out of nowhere when I'm gloved up and down and ready to deliver a baby. And it was like this moment of like, I can't, I can't do this anymore.

I, I need the doctor needs to go get evaluated. So I was evaluated and I was diagnosed with Ms.. I mean, I wasn't even 30 years old, and I was shuffled to the to the shuffle, escorted to the best neurologist in town at the Mayo Clinic.

And I was given the diagnosis and I was given the right medications, but I wasn't given any hope. I wasn't given any, anything but what I felt was a death sentence.

And so what did they say was your plan? My, my plan was to basically, wait and watch and see, you know, what symptoms that I would have. I don't recall exactly what medications I was put on, but I remember at that moment thinking, oh, you know, this whole paradigm that I'm in of, you know, prescribing medications for symptoms, I'm like, yeah, that's not going to work for me because it's not the answer.

It's not the answer to how I'm going to get out of this. Right. Because I had little kids, I had a two and three year old, and, you know, basically being told to go home and be with my children, that was not an option for me.

And so I loved my allopathic, career. I love my colleagues, but I, I, I was out of resources. The tools in my toolkit were not helping me. I had to step away.

I had a I still have an amazing husband that supported me and supported me for stepping away and and trying to learn something new. Now I come from a line of, well, a lot of lawyers and, you know, and a lot of allopathic, practitioners who would think I'm crazy for stepping outside of the of the norm and going to naturopathy school.

But I did, and I started to learn about detoxification and nutrition, and I started to apply it to this body, this sick body. And I just slowly, slowly started to regain my health.

Now, we had this conversation yesterday now where we talked about like, well, what was going on? Well, at that time. Now in retrospect, that six months where I just was declining, we had a dishwasher that we didn't know was leaking.

So we had some mold issues in our home. And I also lived in, an area that was endemic for Lyme disease. And so that was my actual root cause. I went to a Lyme literate physician who said the root cause of what's going on is probably Lyme disease coupled with mold.

You know, that's probably what's going on. So let's go after that. And she saved my life. Thank you, Doctor Ricotta. And from that point on, when you when you realize that, there's a, there's another way that there's, there's root causes, it's it's almost hard to go back.

It's hard to go back and just practice covering up symptoms. And so one of the ways this is this is why I'm so passionate about what we're going to talk about today about autophagy is because autophagy a word that I didn't know about until probably about five years ago.

Looking back, this is one of the the central, central things that I did. I optimized, I think, to get myself back to 110% better than I ever was. And that's why I'm I'm so passionate about it.

Okay. That's a good one. That, you know, reminds me of, like, myself and everybody that I knew. You know, you go through medical school and you get to that moment when you're in residency.

And, you know, I remember I used to try to figure out that I would try to spend like $10 a day on food, you know, so you're just scrambling through staying up all night, and, you may have had Lyme in the background, but then a little bit of mold triggers your immune system, and then you're staying up all night.

I actually, I think the most stressful job on the planet is maybe the most inspirational job at delivering babies. Is what, and so then you're going and it's interesting because then and I've seen this a thousand times because I used to do, epidurals for labor and delivery back in my old life.

And there's this moment when you see people that are compromised because I was four in the morning and you've been up or, you know, 22 hours and trying to kind of manage your way through not making mistakes and you're getting and then and having anything going on and there's an expectation of everything being perfect 24 hours a day, seven days a week.

And so I'm empathetic to that. But now we're going to go through some of the biochemistry because you want to talk about autophagy. And I think, you know this is a peptide summit.

But maybe one of the most important things is to understand the biochemistry of what's happening. And then how can we optimize cellular functioning. Because if we can do that, then we that's almost like the platform that things are running on.

Then we can kind of put on these other things. On top of that. So then tell me, what is autophagy, why is it important and how do you think about it first?

From Conventional Medicine to Root-Cause Healing

So autophagy is so important that in 2016, Doctor Yoshinori O Sumi was awarded the Nobel Prize in Physiology or Medicine. And at that time, I don't think any anyone really thought that it was going to be this big of a deal.

We really didn't. But we built we built on it like all the things that we fight. Well, I shouldn't say all the things, like some things that we find in science.

We're like this is this could be potentially a big deal. So, you know, 2016 we're learning more and more. And so autophagy the process of it is the the cellular cleaning in your body.

So I described this to my patients as these little tiny cellular vacuums that go around and they clean up old cellular debris. Autophagy is also relevant to help us get over viral infections as well.

So much due to cellular cleaning and that respect to so you know, like looking at what autophagy is, it's it's an important mechanism. It's been conserved across a billion years.

I'm not being hyperbolic here. A billion years of evolution. We have this autophagy pathway. And that is so important. And so since 2016 we've done studies.

You can look at the literature and see that impairments in autophagy can lead to disease processes, chronic disease processes, cardiovascular, immune dysfunction issues.

And so we know that up regulating this autophagy is extremely important. I know that it's here because you sent me 18 articles about it, which was awesome that that helped me get ready for today.

How do we upregulate autophagy? So you can't talk about autophagy without talking about the pathway that opposes it. And that is called mTOR. So mTOR stands for mechanistic target of rapamycin okay.

So what is rapamycin. Well rapamycin is a drug. And it was actually discovered in Easter Island in 1972. And it was passed on to two drug drug companies.

And it was eventually cleared for, renal transplants. I say since because my father actually was a recipient of a kidney and he was actually on rapamycin.

So the drug was discovered first. And then in 1991, Hall, the, the researcher Hall found this Tor pathway in yeast. And in 1994, David Sabatini found that we mammals also have this Tor pathway.

So this Tor pathway is extremely important. Again, because it's a billion years pretty much of of having the same pathway. So what is this mTOR pathway.

It is the master regulator of all the inputs that are coming in and deciding if we're going to grow or not. So when you think of, of, baby being like the sperm and the egg coming together, if you didn't have mTOR, if you didn't have that process, you'd have no baby.

So the inputs can be amino acids, glucose growth factors and things. But again, it's the pathway that promotes growth just to kind of keep it keep it pretty granular for for for all people understand now when mTOR is upregulated by all kinds of things, it can be a really good bit like regulated by insulin, glucose, just like growth rate, amino acids, some hormones, it shuts down autophagy.

It'll shut it down. So the problem is this is the central paradigm is that we are living in a world that is overdriving mature. We are over driving this process.

That's fine and dandy. But when you think about the implications of cancer and autoimmune disease and other diseases, we're not giving our bodies a chance to do the cellular cleanup that is so vital.

And there's also genetic mutations that can have a person be more at risk of having a really impaired autophagy. Now, looking back, that was me. I actually have some genetic, snips that were probably expressing because I was so sick where my autophagy was impaired.

So I was like biological traffic jam of old cells and things not being able to be recycled. And how is your body supposed to heal? How is your body supposed to get back to a normal homeostasis?

Al-Sisi's when you're you're full of debris? Okay, that's a good one. One way I heard one description of autophagy is cellular efficiency. Yeah, right.

So then, what in your experience or maybe from the literature, are this the most important strategy for optimizing autophagy? It's all efficiency. Sure.

So I call that easing up on our mTOR. Right. There's an article on that on my website. Doctor Kelly holloman.com. Easing up on our entropy means balancing our blood sugar.

Or you know you're going to go back to foundational things. But again if you want if we want to get the maximum benefit out of peptides, if we want to get the maximum benefits out of any anti-aging, you know, synergetic therapy that we're doing, we have to get our cellular biology right.

And this master control on this more on this topic. We have to make sure that we're in balance. So the mTOR again insulin, glucose make sure that you're monitoring that that you're trying your you're trying to be on a diet that has less, you know, peaks and valleys of, of of glucose.

That's really hard. That's pushes mTOR. A lot of things that, are, are contaminated with, you know, estrogens. There's a paper that can send you out that that shows that, you know, estrogens can actually upregulate the talk talk one.

So that's one complex. That's the, one complex of the mature. So it's upregulated that again growth growth growth. Now we have an epidemic here where 82% of the population above the age of 80 will die of cardiovascular disease, cancer, Alzheimer's and the downstream effects of uncontrolled blood sugar from diabetes.

Right. So we're thinking if those are the things that we're we're we're succumbing to, right. Those coincides to me with too much more too much pushing on this growth, growth growth not enough clean up.

So again you can overdo amino acids. So if you had a real high protein diet, the tiny leucine, they really push on, to our, there's also, you know, hormonal imbalances.

But again, I think the strategy should be a foundational one. So we're looking at diet and lifestyle. But the one thing that is really important that can actually upregulate a your Ampk, so adenine monophosphate protein kinase, so kinases phosphorylation so that pathway AMP okay will activate autophagy.

How do we do that. We can do it by fasting. Fasting is one of the most potent tools that you have in your toolkit to optimize all these things. And the strategy.

This is where I give my soapbox the strategy of anti-aging is not to reverse your chronic disease, it's that you never get one or we along the time until you get one.

Okay, so we're in the anti-aging world and you're trying to push anti-aging. Your goal is not to reverse all these these chronic diseases. It's to get your patients for you can down the line.

Right. So this is all about prevention prevention prevention. Again go back to the things that we know how fasting has been in in history. It's it's it's in all all kinds of texts and things for, for years and years since, you know, like the dinosaurs were around that fasting is very important.

Right. So we want to take advantage of that. The caveat is, is that we don't spend enough money. In my opinion, we don't spend enough money on research to know the dose response nor the timing of fasting.

We do not have a good answer. So when people look at you, if you're a physician, if you're a practitioner and say, tell me exactly how long I have to fast and I'll do a drug test seven days every quarter, do I have to fast every other day?

We don't know. We we we really don't know. We we know that after seven days, your autophagy is going to be kicked on high gear. We do know that, but fasting shouldn't be undertaken by, you know, it's something that you should probably be medically directed because a lot of people's blood triggers and things like that.

So, exercise can also upregulate autophagy. There's nutrients too, that, can upregulate autophagy. Lithium, berberine, resveratrol. And then we can we can also talk about rapamycin in rap alongs if you want to.

Okay. We'll go into that.

Autophagy, mTOR, and Fasting

How are, how what type of fasting protocols are you having people do right now? Sure. So it depends on the person who's sitting in front of me in their phenotype and what else they have going on, what they're willing to do.

Again, I, I don't have a lot of data to hard, fast data to say, okay, well, this clinical study showed this and this. So, you know, we're really we're we're applying empiric treatment.

And knowing that the that, you know, fasting in and of itself is is a good thing. So what I'm doing is I'm having people kind of dabble in what they're comfortable with.

And I do like Valter Longo's five day fasting, mimicking diet so that if someone wants to get the effects, and we don't know how much effects they're getting, by the way, but it's better than nothing, right?

And if you can't do a water fast, if you're unable to do it, you know, there's, there's data on intermittent fasting. So one of the things that I started to do when I was ill is that I tighten my eating window, and there's a lot of good data

on tightening the eating window and up regulating autophagy.

But again, we studying autophagy is extremely hard. It's difficult the Achilles heel of medicine because we don't have we don't have objective measures.

We can't say okay doctor cook I want you to go on this and we're going to measure this autophagy marker. I want you to go on this fasting protocol. And then we're going to measure that autophagy marker.

You know, 25 days later we don't have that. We don't have that yet. The so when I, I was, you know, I was doing a lot of yoga in my early journey of studying integrative medicine.

And I found out about fasting, and this was back when I was still doing anesthesia full time. And so I said, okay, I'm going to do it. And so then for about a year, I fasted, I did a 24 hour water fast one day a week.

And so then what I did as I did, and I would do it on like Tuesday or Wednesday, just because it was kind of impossible or something. I would just do it.

And, you know, interestingly, for my mental clarity, those were all of my best days because that goes. Yep. Well, and interestingly, what, and for people who haven't done it, you're fasting.

And so then all of a sudden you get really hungry. And so then all of a sudden you're you're hungry, you're hungry, and you think you're going to die of hunger and you almost kind of shaking.

And then next thing you know, all of a sudden it's like you felt just like this, totally fine. So then I then you go for a couple more hours and then it would happen again.

This is what happened to me. And then that happened for about a month. And then I broke through that. And then now if I like, didn't need till tomorrow night, I'd be totally fine and I and it.

So something reset my metabolism through that experience so that I think I got much more efficient from, liver perspective or gluconeogenesis. But then I probably turned autophagy on.

And so then things just started to work better. Right? Right. And then you're probably cleaning up your senescent cells too. And that's what I find with people, is that when they embark on starting to fast, they go through those, you know, like starving to death.

I'm going to eat my hand and then, you know, I'm okay. That and then something, something flips for them. Where I really do think it has to do with senescent cells.

So senescent cells are when your normal cells, get to a point where, they're, they're marked because they shouldn't replicate anymore. Right? So they're frozen and they're called zombie cells.

But and really, it's not that it's, it's a hermetic where, you know, you you have a lot of senescent cells that they give off successfully. The susp, the SAS version of them that are spewing out cytokines.

Right. So if you have too many of those, if you haven't even ever dabbled in autophagy because you're just pushing so hard on your mTOR, because you live on planet Earth.

So, you know, and you're just doing the standard American diet when you start cleaning up those senescent cells, your inflammation is going to go down.

Right. And so not only are you fixing your, your, your biochemistry, you're also like cleaning up that biological environment to have more cellular processes going on.

There's things that that, that that go on during fasting, during autophagy, during the Ampk activation that we haven't

even name. We don't even we don't even know.

But again, I know that it's tangible for me as well. And a lot of my patients. Okay. So then two questions. Your your thoughts on intermittent fasting in autophagy.

And then in relation to that, are you using the continuous glucose monitors, to help people as they go through that process? So I am a big fan of both.

I, I think that, intermittent fasting again, we took a Hippocratic oath to do no harm, and I see no harm in and having people tightening their eating window down and seeing how they do and to guide them.

I do like the continuous glucose monitors. In 2020 22, I'm going to exercise for my vernacular, go keto. Because what I'm going to say to people instead is slap a CGM on your arm and what you put in your mouth.

Make sure it's not spiking your glucose because it could be popcorn for some people. I mean, it's the strangest thing. What? What about watermelon? For me, just, I mean, makes my glucose go off the charts.

So learn about your body. Don't attach any, you know, any concepts or any, you know, buzzwords to learn about what your body does with the energy, the food that, that you deliver to it, and I do.

I find that completely and it's very helpful with getting someone, to be more metabolically, you know, burning their into the fat burning because they can actually see they can actually see what the, what the, the things that are eating are doing to their blood sugar.

And then they learn and then they don't necessarily have to wear a CGM the rest of their lives. It's that they've learned what their bodies, how their, bio individuality.

And that's really the you know, I think that's personalized medicine, right? Right there, right there. You can do it all by yourself. So then for people who are not, are new to this conversation, it used to be that, we would have to do a finger prick and then take, a little glucose and then, monitor and then check that and then look to see what the blood sugar was.

So the idea is, well, I don't feel like doing that right now. And so then what happens is people would have kind of no idea how their blood sugar is going up and down throughout the day.

And this, this monitor comes on and then you can just take your phone and then and then there's also some Bluetooth I just got, can I just people that have a Bluetooth enabled version of it.

So it just tells you real time what it is. Yeah. Which is kind of amazing because then suddenly you realize and probably not too surprisingly, which is why maybe we all love watermelon so much that if you eat watermelon, your your blood sugar may go sky high.

But then now we can. Now we can control that, which is super interesting, of the, supplements to improve autophagy. What are your favorites? What do you use in your clinical practice?

So my new favorite since coming home from a forum is spreading and, I think that is an amazing compound. It's been a while that we've been waiting for an actual, correctly harvested or, you know, whatnot.

So somebody and finally, I have one that I really like. And the data behind it's really good. I like, there's a product called a autophagy assist from Professional Health Products has quercetin, berberine, resveratrol.

So those are some of the nutrients, that I like EGCg, curcumin, those are really important. Lithium, and vitamin D is known to also upregulate Ampk. But again, it's it's, you know, it's not like we're going to take these pills and we're still going to continue to overdrive our mTOR.

Right? So you can't do both like they're opposing mechanisms. On a granular level, there are opposing mechanisms. And we want to make sure that we're not just taking these pills and continuing our crappy lifestyle is that we we have to implement some things and exercise, you know, oxygen, hypoxia is a very potent of regular, autophagy, but so is exercise. So I'm looking at exercise and reframing it as like what can your body do.

Your beautiful body. What can I do for you instead of like a punishment? It's that it's a celebration of any which way you want to move your body. It's going to help you with your autophagy.

It's going to help you again, get rid of these, the zombie cells that are secreting, inflammatory compounds. It's going to help clean up that by cellular.

So the components and again it's going to help with, possible viral infections or some there's some data on that as well. That's a good one. And we are going to have to keep talking about viral infections for the rest of our lives.

It seems like the, you know, as you're talking the balance between mTOR and autophagy, it reminds me almost, you know, some of these conversations I feel like maybe we've been having since the dawn of time, you know, it's almost like yin and yang yang, feminine, nurturing, supportive.

Yang growth, expansion. Yin, clean up, you know? And so, from a Chinese medicine perspective, this sort of this conversation falls in kind of right in line with, with, I would say, a lot of ideas of health that have been promoted 100%.

And it also falls in is that we don't just drive autophagy all day long. Right? I mean, towards very important protein synthesis, bio lipid synthesis.

We I mean, we absolutely need this. It's it's all about balance. It's absolutely all over balance. And that's again Chinese medicine. The balance. Right.

And so then the so autophagy clean up and then mTOR is, is basically anabolism and growth. And so then there's this drug rapamycin, which is an inhibitor of, of an embolism.

But Tom, tell me your thoughts on that. What how are you thinking about that and what's happening with that. So it's really interesting. So again, discovered in 1972, finally became a drug to help, patients not reject their transplants.

So immunosuppressive. Right. So that's what we really thought. Rapamycin for a long time. And then along came John. Manic. Brilliant, dramatic. We started to think, about, well, what if we use it in a different dose?

What if we brought it on down to a different dose? In 2014, she published a paper with Clic Stein that showed that indeed, if you bring down the dose of rabbit myosin, that actually they use Rad 001, which, which is a rappel lock.

Okay. So they're using Rad 001. And I will say this is a Rad 001 is approved for renal cell carcinoma. Right. So it's approved for that. But what they did is they took it in healthy volunteers.

And they wanted to know if it would help, upregulate the immune system. And indeed it did have some positive positive effects. So, you know, I think that I think, again, when you're looking at the population of people who have renal cell carcinoma, the safety data, right, that FDA is concerned about safety is that we're not so concerned about people who are dying, right.

The safety margins are much wider. Now, when we're talking about prevention, we're talking about using something to to to prevent, you know, I guess, anti-aging to prevent aging, prevent, the spurring on of mTOR.

There's a lot different there's a narrower window because it's not it's not a necessarily a need. So right now I think that's kind of where we're at, is that there's not a lot of money that's wanting to be spent in pharmaceuticals.

On these long term. You know, it takes so long to get the data that that would show safety. Right. And so we're kind of we're kind of stuck. And that's why the jury's out for me.

And we have this discussion instrument that is that I, I see I can read the I can read the literature and that they're, they're rap blogs and rapamycin.

It does suppress mTOR. Right. So yes. And there's a there's a certain dose response. We can we can see that. But I'm like, am I comfortable in using at this point.

Not really. No, I'm not comfortable. I think there's other things that we can use that this, that this point. Now if I had a a very, increased risk of a neurodegenerative disease, I may think differently.

I mean, that may change how I feel about it. And I'd be I'd have to be more aggressive, on that end. But right now, the jury's kind of out for me. The, as I read an article, that said rapamycin was a little bit unlucky because if it would have come out as a low dose in the first place, it would have been considered an immunomodulatory drug, and it would have been the darling of integrative medicine, because everything that we try to do is to regulate and balance, immune function.

And so then, the major levers that we're pulling is either trying to improve autophagy or potentially in certain ways, balance and decrease symptoms. And we've got supplements, lifestyle, all of those things as factors to begin to do that.

And interestingly, when we do that right, the side effect is that we tend not to be plagued by the the diseases of the day, which have been traditionally the obvious sort of big metabolic conditions diabetes, stroke, coronary artery disease, cerebrovascular disease, and then all of the neurocognitive, neurodegenerative things.

But then now we've got Covid. You know, I was very you sent me an article and I thought it was about post-Covid syndrome. And, you know, I think that that's a good conversation to go into a little bit because I thought it was a fantastic article.

CGMs, Supplements, and Rapamycin

Take me through your thoughts on how you think about long Covid, Covid long haulers and then the immune, expression of, of of those people compared to a normal cohort.

Well, up until about September, I think it was a it was a black box that we all were wondering what what is going on here? You know, we have, dealt with chronic infections, Epstein-Barr, CMV for a long time, but this was throwing, a curveball at us.

And then Andy Hayman handed me this brilliant paper that I handed you yesterday. And it talks about the similarities between Sears. So chronic inflammatory response syndrome and post-Covid syndrome, and how they are very much alike in their signatures with a hypo metabolism, with the transcriptome omics.

So how Doctor Hayman will look at a person with Sears is that he uses a test called the geni. And he looks at the expression of the DNA. Brilliant, right.

Well, like the messenger RNA, like what is going on? What is being expressed? Not just your DNA, not just your blue purple, what's being expressed. And you can see signatures, of a person who has chronic inflammatory response syndrome.

And then they have created a, a treatment plan or a treatment protocol based on a person with and and again, so it's it's based on the transcriptomics.

The diagnosis is based on transcriptomics. Symptom survey, the visual contrast test, which I would say visual contrast test is one of the most underutilized tools in our tool kit is $13.

It can be repeated. It's been validated since 2010. But it's I mean, how do you do it? I go to visual contrast test.com and I pay my $13 and, you know, you pass fail.

And, we could probably do a whole, entire entire entire lecture on that. But I will just say it's worth people's time to go explore that. It's worth practitioners.

Time to just go and look at this test. And it's in this paper, by doctor, Doctor Hayman to talk about the evaluation. I digress. So what they're saying is that there is a similarity between the Sia's presentation and the presentation.

When people have long haul and, Doctor Haven, Doctor Shoemaker found, water damage. Buildings are really a key factor in people who, have have a long standing that chronic inflammatory response like they cannot get out of it.

There's, there's, genetic susceptibility that has, to go along with that. But very interesting because it's a paradigm where then you can think, okay, if if they have the, they have the secret sauce for how we understand and treat series.

And these are very much alike in their signatures and what's going on biochemically, the TG, RF, beta increase like all these things are, are similar that maybe we can we can take what they're saying and apply it to our patients who are struggling with long haul.

So now I'm going to turn this question to you, Doctor Cook, and say, okay, well, how did you feel about the paper? Okay, I loved that. And I thought it was is very appropriate for this moment.

So then I'm going to echo what you said just to. And so then we can go back and forth on this, because I think this is a crucial thing for people to understand.

And, and so there's two stories. So one is this person the just as in a water damaged building and they got exposed to mold hypothetically that person, they breathe some mold and they had a biofilm in their nose.

And then next thing you know, they've got more than their body. That. But it's not just more just mold. And I kind of mix and grab negative rods. This is the Hammond Shoemaker literature.

And thank you to them because I think they've they're very important, in furthering this line of thought. So then, that basically those mycotoxins and then the, the bacterial byproducts causes inflammation, particularly in the central nervous system.

And so then what does that inflammation do? It makes it so you have problems with your visual fields as you can't see. Well. So you and and and there's a pass fail on this test that you mentioned the X, which I think is very important.

And so then when that happens, it's almost incapacitating for some people because the of inflammation in the brain. And so then this I think very interesting work done by with the gene test, is is that they look and they see that we're printing the inflammatory side of the genome.

And so then that, that, the inflammatory genes are all upregulated. And so they're all in red on the geni test. Now, when I heard when I first heard this literature and I go, oh, that's exactly the same thing was happening in long Covid and, and, and, Epstein-Barr and CMB and Lyme disease.

And then we know that so many people with Lyme disease end up having a bunch of those other things, or so many people with mold have those other things.

I remember, I think I think God bless all of those, residents that are living in moldy apartments right now, like we were, and so but so then, so then interestingly, long Covid looks just like that.

And the people who get the Covid long haulers. So then my question the question is, did they did they already have that in the background or does long Covid all by itself without any of those things cause a similar mechanism?

But that's the jugular question. That is it right there. That's it. And I don't mind. I mean, it's a little bit of both because when I test when I, when we've been diving into this, some people have a bunch of those things or all of them and some people don't.

And so then, you know, are you familiar with the Bruce Patterson research? So then what he's saying is that another white blood cell, the monocytes, well, can come in and then they pick up, the spike protein and then that this regulates them, sir.

So now we've got multiple aspects of the immune system getting dysregulated and potentially spinning out of control. And they can go all over the body, cause symptoms wherever they go.

Long COVID, Mold, Lyme, and Immune Dysregulation

Here now my now just guess what is the final common pathway that fixes these these people who were exposed to water damage building that have mold and chronic mold symptoms.

A peptide VIP I think that's right. Yep. That's right. So and so then that one. And so then suddenly began to say oh okay. What what we really need to do is we need to take all of those other conditions, look at mold, look at the Covid long haulers.

The reality that I'm seeing is, they're having a similar immune, signature with their blood testing. So they're having a high TGF beta, they're having high il6.

They're the rantings. And so there you have all of these aspects that are getting triggered up. And they're fairly if they're not the same they're like brothers and sisters and cousins.

And so then what we need to do is down regulate and start to balance immune function. And interestingly, when you do that, then a lot of the side effects and, you know, for these chronic mold people, a lot of times they will have pots or they'll, postural orthostatic hypotension where they stand up and passed out.

But then what will happen is, is that with many of these people, they also have mass occupation and postural orthostatic hypotension, which are common side effects across all of these population.

And interestingly, traditionally we haven't really used peptides early in the in any of these service patients because we use VAP at the very end. Sure.

But the bio regulators have an opportunity to come in sooner and start to support people both on on the immune, the immune peptide side and then the by a regular peptide side 100% I yeah.

That that's that's very that's very key. And I think that's something that, you know, we should we should lead the movement in that because I see no reason.

I, you know, looking back at the course of my illness, I mean, I use on a daily basis or weekly basis, I still use about four different peptides. There.

Extremely important to why I stay healthy. And I think looking at the pathogenesis implementing in Cmax, some L 37 like those would be extremely, effective right out of the gate.

Okay. So tell me so then when you got your diagnosis what. So then peptides helped. So we got to go into that. And then what what do you really credit.

How did you I mean because maybe we buried the lead like we got to we got a like dive into how did you how did

you do it. Like what what what worked for you.

Yeah. And I think that that's a a question I get asked all the time. And my answer is I did 100 different things. I completely overhauled my metabolism.

I will say that is that I stopped drinking Mountain Dew in the middle of the night, delivering babies. You know, I, I balanced my blood sugar. I, I implemented intermittent fasting.

I think I really upregulated my autophagy. I started to get in the sauna. I did hot and cold therapy. You know, I, I started to exercise as tolerated.

I was already exercising, but, I mean, like, more of a strategy of, like, longevity. You know, I wasn't going to gym, like, killing myself. And so. And then I started Nutri that I try, I tried to really optimize my nutrients, like making sure my body had the, the correct nutrients.

I really never expected, the, you know, vitamins and things. I thought I was kind of like, well, you know, we get that from our food, but, you know, it's it's nutritional biochemistry.

It's all biochemistry. Your your machinery of your body works using, you know, these vitamins and minerals. So now I take that very seriously. The status of my electrolyte and things.

And again, it wasn't one thing, but I will say this is that, you know, are these stem cells, you ozone therapy, you know, I every IV that I could that I could do, I tried it on myself and, you know, peptides have really given me an edge.

I've never even dreamt that I would have. And that's probably in the last two years of using them. And I'm just so impressed. And that's why I'm like, yes, I'll be honest.

I mean, I absolutely love peptides. I apply them on my patients, I apply them to myself. They save my life from Covid. You know, I mean, well, they save me a lot of more days, I think.

More days. And. Yeah, you you see, Max, and that's, for the Ms. conversation. I think that that's an interesting one. Very what's what was your how do you feel when you take it?

Tell me about how, your, your thoughts about how it works and, and, you know, having chronic, Lyme and mole for, for, for, for so long, I think because I really didn't get, like, an accurate diagnosis for about like 3 or 4 years, it really took a toll on my neurological system.

And I remember at one point being so ill that I couldn't figure out when someone was trying to tell me their phone number, I couldn't figure out what a seven was.

So I had some major, neurological impairment. And so I think that even even using C max 12 years or how many years later that I'm getting a benefit because of the neurological pathways, and you could I might talk this question to you back to you and the mechanism.

But tangibly, I feel sharper. I weren't ordering, so I watched my sleep. My deep sleep in particular, has gone up. So I think my lymphatics, are actually draining my brain at night.

And so I'm not sure if the mechanisms the max increases didn't have, but I sort feel sharp. Yeah. It does. Yeah. And that's what I'm feeling. Definitely the, the, I'll see.

I, I have seen a lot of people see C max increases BD and F, however, I've seen a lot of people will tell me that they sleep better with it. And then sometimes, they'll sleep better with C max.

Sometimes I'll sleep better with Cmax and see like, okay, which has a Gaba mechanism. It's interesting to think

about your story with the whole conversation of Ms..

And I think it's important also to echo this idea of the diagnosis of Lyme disease, which is this, this caused by a bacteria called Borrelia, but it's a tick borne infection.

And the and, a lot of that in western Montana, where I come from. But, but when I hear that somebody has Ms.. Then it's like, do not pass go, do not collect $200.

You've got to go figure out if they've got mold, figure out if they've got Lyme. Because typically, almost always they'll have one of those two. And they're almost always well it's a total 100% a lie to interview you.

And, I'm so happy with how well you're doing and, all of the, work that you're doing and, and, keep up the good work because we need it. Thank you so much.

I started off it was a pleasure. And like, I started our conversation out yesterday by saying, like, I'm your number one fan right here, and that, you know, the contributions that you make, and I apply them and I, and I help people.

And so there's no better compliment than, than utilizing your knowledge and actually putting it into action. And I and just I'm very thankful for your work.

Oh, thanks so much. Have an awesome day. You too.