Introduction to NAD and Episode Overview

Hi, welcome back. I'm Natalie Nidam your host and today's topic is a hot one. It's NAD and it is everywhere. it's been everywhere for a while. Its the shiny new object that's not even that new.

But the problem is that most people are really only hearing half the story and I think that when it comes to N. A. D. we need the full story. So I got to sit down with Courtney Van Busum to break down the real cellular science from the salvage pathways to inflammation, stress, all the hidden factors that are actually accelerating energy decline and what you should be doing about it.

Now, whether you're using precursors, thinking about NADIVs, doing subcutaneous injections, transdermal electrophoresis patches, whatever it is, This episode adds the nuance that you didn't know you needed and that I think everybody really needs to hear.

So if you love what you hear here, there are a couple of alternatives that Courtney offers to the audience. And also there's a really cool exogenous ketone drink we talk about.

Those links and special offers will be in the show notes. But you know what? I really want to encourage you to listen to episode first before you hit buy.

All right, so I want you to listen before you hit buy. Now, this episode is brought to you by Qualia's Creatine Plus by Level Up Health's Ultimate Liver Complex or Complete Liver complex.

And you guys know how much I love that and Just Thrive's Gut Essentials, all with special offers, again, just for you, guys, my listeners. So check out the show notes below for details and enjoy the episode.

Courtney Van Busum, welcome to the show. It is a pleasure to finally have you here today. Yeah. Hi, Matt. Thank you for having me. Super excited to join and talk cellular pathways and all things NAD.

And it is a very controversial topic these days and very hot. But before we dive into the science and all the things, I want to talk a little bit about you because you've kind of come onto the scene over the last couple of years, really, right?

But you grew up in a family that is all about this stuff. You grew up surrounded by healthcare, and this really interesting combination of healthcare and entrepreneurship.

So what's the earliest memory you have of that world, of you thinking, oh, maybe I'm going to go into this myself. Yeah, that's a good question. I actually haven't, no one's fully asked me the origin story.

So yeah, as you alluded to, my mom's doctor in this space and she got into longevity medicine 20 years ago and started a clinic with my dad. The entrepreneurship and medical blend and I sat right into the middle of that.

But I knew I never wanted to be a doctor because I watched that and didn't want anything to do with that, but I liked science.

Courtney's Background and Path into Longevity

That's where I studied biomedical engineering. And that was my baseline for it. But then kind of gotten to the business side of it and studied a lot of entrepreneurship, startups, worked with startups join startups.

And then I did something completely different. I worked marketing at FinTech for a little while as like my coming of age job. Nice. But I think it really did, as you alluded to, it seeped into my subconscious in a lot of ways.

I remember in high school, my mom telling me about the dangers of birth control pills. At that time, everyone I knew was getting on birth-control pills, and that's what we did.

And I share this story in jest, even though it's kind of psychotic. But when I somehow, you know, a mother does, she found out I was thinking about trying to get on She printed out a bunch of research studies and put them on my bed.

I know your mother and I can see that. What if you just leave it on your pillow? I was like, what do I do with this? But I scared enough that I didn't follow through at that time.

So I think, you know, it's kind of always been something I knew and it was really crazy to try to live in that world, but have traditional medicine being talked about all around me.

And then now in the last, so I did something else for a while and then COVID brought me back to Colorado. And that's really when I started to get involved more deeply in longevity business and working with longevity clinic.

Then we started the second company, Longevity Launch Labs, as the way to do the business side of what we had learned. So it was a nice pairing to really get my feet in operations, but then also start to build some of these broader business initiatives.

Yeah. Well, you know, and it's interesting how as a young, comparatively young person, You've kind of jumped into this longevity space. Like when people ask me, why'd you go into longevity?

I'm like, well, dude, I am old. Of course, But you know, young people are notorious, more youthful people, are notorious for never believing they're going to get old.

And I feel like there's a new awareness around longevity that people need to start young. For best results, you want to as young as possible to thinking and orienting yourself in this space.

I grew up around trying to understand preventative medicine, even when you're being told you don't need, you know, your young, and you are fine. I mean, prevention starts when your healthy, right?

So I kind of luckily started to build a lot of those mindsets early. So it's been fun to watch like my friends and people starting now just to hit their 30s and their 40s, asking me all these questions that I've been talking about for a long time.

what really pushed you towards solving age-related problems instead of something else? You clearly made a decision, and we're going to talk about some of the some of the molecules, some the pathways that you dove into and came out the other side with new solutions to.

Was there an inflection point? I mean, it's a little cliche, but I think COVID was that. It forced me home and it forced to me back into this mindset of health much more deeply.

And, you know, at that time, right, we're starting to learn about cellular pathways that I'd already kind of been hearing about. So a lot of my history of biomedical engineering and learning biology and chemistry and all of this actually being talked about in the mainstream.

I got involved in the clinic, started to do operations, and all of a sudden I'm like, oh, I really like this blend of the science and the operations. And I am really good at it.

So I just started, to go down that path. I don't know if it was so much like I was like… This is now my future, but I started see that there was this me and my skill set really matched it." You know, it's funny how the world has now oriented to before COVID and after COVID.

It's pretty wild. Do you think that COVID changed? Like I feel like COVID was a bit of a, it's a blip and it changed

our trajectory in many ways from a health perspective.

Like we now have to take that, the presence of what's got left behind. and we have to take it into account in almost everything that we do. Yeah, I mean, it's a little scary, but I think and what, you know, if you take a more optimistic mindset, we will propel things forward way faster than we would have otherwise because to exactly that, a post-COVID world is real.

We see way more health problems as a result of the spike protein, COVID vaccine, all of it. I was just talking to somebody at A4M who was working on that and they were saying, even if you got COVID once, they can still test for the spiked protein in your blood.

It's still causing mayhem. So we have to figure out How to mitigate it. Yeah, what to do. What do we do about it? Yeah. And that's where like being in the clinic, I saw those patients, right?

We were one of the first clinics that kind of got known as a long COVID clinic just because we looked at cellular pathways and that what happens. COVID kills your mitochondria and so how do you heal that?

So it's a post-COVID world and we have to learn to live in it Hey, folks, I just wanted to throw a little message in here for those of you who are sending me all these incredible questions on social media or through YouTube or even on Spotify, wherever you're listening to the podcast.

I wish I could get back to each one of your personally, but unfortunately, And because I cannot, I created, about a couple of years ago now, a membership community where I get to hang out with people just like you.

I do live weekly Q&As, almost weekly anyway. We also do have podcast guests come in to answer everybody's questions and do presentations, you get to interact live with those podcast guests.

We will sometimes do challenges with some of the partners. Like in 2026, we have a mitochondrial enhancement challenge coming up where we're going to be testing mitochondria function.

we are going be to testing people's deuterium levels. If you haven't heard about deutereum, We've got podcasts coming down the pipes on that. And then people will be invited to follow a personalized protocol and then retest their mitochondria on the other side.

We offer that in the membership community and we do it at incredible discounts that you just can't find anywhere else. So if you're interested in hanging out with me and other like-minded people, which actually happen to include some pretty awesome practitioners and even some previous podcast guests who've come and joined the community, then I invite you to check it out on my website natnidam.com slash the dash longevity dash community or just go to natnydham.

com and look for the longevity community tab at the top of the page. Click on that. and see if this is right for you.

COVID, Cellular Health, and Post-Viral Resilience

I would love to see you there and we could make 2026 our best year ever together. So once again, that's natnidam.com. Just look for the longevity community tab at the top of the page.

Now let's get back to the show. It is interesting to me how understanding the people who have the obvious lasting effects and yet other people were not, which in and of itself will force the medical industry to really start to consider what leaves one person susceptible and another one more resilient.

And it doesn't mean the resilient person doesn' t still have maybe some built in weaknesses that they didn't have before, but it'll, it, to your point, I think it's going to push us.

It's gonna push the medical industry to really take a harder look at these things. I also pushes us, you know, we've

talked about preventative medicine a lot.

Now I'm going coin this term, like resilient medicine, because resilience is the great word. How do you build resilience? Cause everything is a toxic world.

Everything is trying to, to hurt your ability to heal and survive. So how do you be resilient against that? Looking back, what did you once believe about aging or metabolic health that you now realize was completely wrong?

Or what have you changed your mind on? Is there anything? Yeah, I think, you know, fundamentally I think what I would have to say, the thing that I changed my mind most on, especially as I've gotten deeper into cellular medicine, is that we just need to support ourselves and our systems in the way that they were already designed.

I thing a lot of longevity and biohacking has been, how do we fix this? How do force us in a certain direction, improve this thing by taking a bunch of net new?

And the more you look at how intuitive our cells are and our systems are, you learn actually let me just nudge and let just heal and then things will work naturally.

So I think a lot of times we cause more problems by trying to throw everything in the kitchen sink at fixing it versus maybe we could be a little more intelligent in this little tiny steps that we take.

Yeah, I think that that's a perfect segue into our conversation because NAD is at the center of this people thinking, if some is good, more is better.

And how do I push this? And, how to I optimize my N. A. D.? How do i get more N A. D.? So for people who know that, you know, they've heard about N D. But they don't really understand the biochemistry.

First of all, why should every longevity enthusiast really care about it in any way? Yeah. So, I mean, NAD has gotten kind of some hype. for a good reason, right?

NAD is found in every single one of our cells. So therefore, that tells us it's pretty fundamental to how life works and life functions. And so just to define it, you know, NAB stands for nicotinamide adenide dinucleotide, but we just know it as N. A. D.

and it is a coenzyme. What that means is that it actually is this molecule that allows our enzymes to function and to catalyze different processes of life.

What's so powerful about NAD and why I do say it's worth the hype is that it is this really interesting redox molecule. Redox, if we remember from way back in early bio, is the ability to go from reduction and oxidation.

This is flipping back and forth that causes energy to move along the electron transport chain, and that's what creates ATP. the category for NADH and Nad+.

So it's two sides of the same coin. And that's important because that NAd+, right, is the oxidized form, and it means it is missing an electron, so it has this positive charge that allows electron transport to then happen.

That movement of electrons is critical to how our cells make ATP, which is how ourselves make energy to do literally everything. So that's why you should care about NAD.

And I think that we've started to understand it has this really important role in cellular energy, but also in cellular repair. That part doesn't get tacked on as much that you need NID to repair your DNA through your parts and your sirtuins need it.

So it's this critical energy molecule that your system relies on for functioning. That's a great explanation and I love that you bring up NADH because I think it's the other half that never, that really doesn't get talked about.

And I that where we get in trouble is by ignoring the NAH piece. We've, we've we lack understanding and balance in the fact that there needs to be balance between NED and ADH and the cell is desperate to hang on to that balance.

there may be trouble brewing in this obsession for bringing more NAD into the system. A hundred percent. I mean, they're, like I said, there are two sides of the same coin and that ratio is really important.

And that ration actually is different in the serum than it is in cytoplasm, than is inside the mitochondria. So our cells have different levels of Nad plus and Nadh.

That's why just this idea of like, let me measure my NAd plus levels in, in serum is kind of, useless in a lot of ways because it's not giving you that inside scoop of what's the balance.

And NAD is super critical, like you said. It's kind of that first molecule that helps start electron transport and kicking those electrons down. helping the, I like this analogy that Chet gave me that I've been using a lot, which is like ATP is the money that the body spends and NAD is banking system, right?

Cashing in NED and NAVH and that's what allows your body to use the cash of your glucose and your ketones and you're your fuel sources. That's a good analogy.

I love a I love a good analogy. And that's something that people can really understand, right? So let's talk about what happens to NAD as we age. So a lot of people talk NAAD just naturally goes down as age, which means we have less cellular energy.

How NAD Works in Cells

To your point, less cellular energy means nothing works as well as it should. whether it's repair of DNA, whether its metabolizing the nutrients that you eat, like nothing in the body is going to happen if the cells don't have the energy that they need.

But from your scientific and engineering perspective, and I have to say that I love engineers in this space because people, the engineers and this face, sometimes they have almost no medical background, but there's such a systems mindset that they're able to break everything down.

When I was coaching, they were the best clients because everything was on a spreadsheet. So I could go through the spreadsheet and say, okay, get rid of this, this.

I love the engineering mindset. If I come back, I want to be an engineer. But going back to the question, from your scientific and engineering perspective, why is that an oversimplification?

What's actually happening in the cells when we see that NAD decline? Well, quickly, I appreciate the engineering mindset call it because I genuinely enjoy talking cellular pathways.

And I think probably that's weird for most people, not in our space as much. but it's because it makes sense to an engineer. It's actually very stepwise.

So to lead into that, so NAD fits into them. That's kind of why I've gotten to know these pathways so well. But this idea that we make less NADA as we age is very much a misconception.

We definitely you know, when you look at the NAD available to us as we age, that number may be less. And I think that's where this idea has come from.

It's really not because ourselves forgot how to make N. A. D. We have this really smart system of N-A-D recycling, right, called the salvage pathway. But it's that we have more things consuming and degrading our N A D.

And that's the crux of the misconception. So we think, oh, OK, I have less NAD. I need to pour more in. And we use this bucket analogy a lot, right? Here's my bucket of NED.

It's less. Let me fill it up. But we've totally forgotten to plug all the holes in the bottom of a bucket, which are the degradative enzymes and the things that are eating and consuming your NHD.

And what are those things? Well, as we get older, there's more of these drainage, inflammatory drainage systems, right? And so that could be stress. That could inflammation, that can be illness.

But there is these enzymes, like one of them is called CD38, one's called NNMT. We can talk about those a little bit more, but they're going to consume up both the fuel that we need to make NAD and also the NED itself.

and you have more systems than fighting for that. Things like senescent zombie cells or fat cells, cancer cells. Those things also want energy just as much as your sirtuins or your parps are asking for it.

I love that you bring up the NMNT and CD38. Now CD 38 has come up and so there are definitely ways to manage CD-38, which we'll talk about in a minute.

Is there also an issue with the salvage pathway? There is, I mean, in the intelligence of the body and the intelligences of this cell, the cool thing about the buddy is it's not going to use a resource and then throw it away, particularly, not when it comes to something as critical of NAD.

So we have this recycling going on. But my understanding, is that that salvage pathway starts to be compromised in some way. Can you, are you able to talk a little bit about what is, that what the stressors and all the stuff is doing or are there specific things that are compromising that salvation pathway?

Yeah. So let me just quickly define. The salvaged pathway, it primarily functions on nicotinamide and that's the thing. Like you said, our system doesn't really waste stuff.

an intracellular NAD ultimately ends up back as nicotinamide and that nicotenamides turns back into N A D. And so I'll talk briefly on the precursors.

The precursor is the way they work is they actually are extraceller and then they have to get converted down into any D plus. Then that recycles into nicotonamid and continues.

So when you're looking at the salvage pathway, The two areas that you're worried about are that NAD plus molecule that gets put out, and then the nicotinamide molecule, which is sort of the fuel for that and N80 plus.

So NNMT, that enzyme that I just mentioned, it's actually degrading nicotine and it loves to steal methyl groups to take nicotenamides and steel methyl group.

And that converts into homocysteine. You're actually creating this inflammation reaction from that side of it. CD38 is degrading, actually chewing up your NAD output, right?

So when I think of it, there's actually two buckets, nicotinamide and NED, and these enzymes are consuming either the fuel for NADA or the NDA itself.

Inside of that salvage pathway, that becomes really important. Okay. How are we all doing, guys? Are you hanging on? You need a paper and a pen for this episode.

I should have said this at the beginning, I'll say it in the intro. So you mentioned precursors. Do you want to talk about the precursor you're referring to?

I'm assuming you were talking about NR, NMN, and the big, there's more fur, feathers and blood all over the world about people screaming about which one's better.

Yes, so I'll start by saying like, I think there's a time and a place for precursors. Specifically though, what people lose sight of is that a lot of the input is not actually what's going into the cell, right?

Oral NMN or oral NR is going to turn directly into NAD inside the sell. So we're missing that usability piece. When I look at it, you know, the difference between the two.

So NMN can't officially enter the cells. It's broken down into NR. And then NR goes into the cell and is rebuilt as NNM. That's converted to NAD. You actually have this multi-step process.

NMM has to go into NR before it turns into intracellular. What's all the big deal with NML? Why is everybody screaming about NMP being so important? because it's a precursor.

But why not just take NR? My suggestion would actually just be to take nicotinamide. That's going to be your cheapest one. And that's just a B3. Is that B-3 vitamin?

Yeah. So it is the most available and it the more easily taken into the cell to turn into NAD. Whereas NR, you still have to convert it to get into NAD.

That's why truly this misconception of these precursors are not just fueled directly for NADA, they have go through some steps in the process. And that's even like IV NDA is even more of that.

I was going to ask that because the NAD molecule is large, right? But we know it does not get into the cell as is. So what happens to that NID when we get an NDIV?

It has to get broken down. Right. The same way. All the way down to nicotinamide basically. Exactly. It's getting broken all the into metabolites to then enter the cells and then turn into intracellular NED.

Wow. It's the NAD you're taking from an infusion is not the that's getting into the cell. And so do you have any idea, any theories about what that N. A. D., like I've heard theories that what the is doing is acting as an extracellular signaling molecule that is providing some degree of benefits, but it's not what people think it is.

Yeah, I think you do get this sort of flush of, you know, an N A D. a deep NAD replenish. And so the place that I say infusions make sense to me is when you're really trying to restore, right?

NAD Decline, Salvage Pathways, and Enzyme Drain

You and I are both having a cold. If we get really sick, then maybe you need to store NED levels fully to kind of help. You're not going to get that same influx from a precursor that you would from an IV or like post a marathon, something that really delights your energy system.

But the thing that I think partly why the whole NAD infusion thing has gotten really talked about is people are like, I feel good. It's funny. I was literally just at the wedding on Saturday and the groom, who's my friend, he's like comes up to me.

He goes, Oh my gosh, someone did this NAAD infusions for me, and I don't know what that is, but I He's like, do you know what that is? Don't you find it fascinating how people will allow people to stick needles in their arm and don't put a bunch of stuff without knowing what they're doing?

I know. He was like do know, what is that? Yeah, I do. Oh, actually I do. But people do get this like, feel good. And I think honestly, a little bit of that is a fight or flight because you've thrown redox off, right?

And you're getting this, this kind of overwhelm of the, of system that your body turns a bit into adrenaline, if anything. Right. Well, you also feel pretty crummy when you get the NAD infusion.

If you are getting a high dose NADA infusions, we will feel bad. There's nothing better for feeling good than feeling

bad, It's like a form of contrast therapy, only different.

But to that end, I mean, all do NAD infusions a couple of times a year as a replenishment. But in between, i'm a person who really believes in providing precursors where there's a new trend right now, or I don't know how new it is, but there is a trend where people are doing daily subcutaneous NADA.

And I feel that now we're starting to cross the line in potentially throwing that balance off. Right. I think that's what people are missing. Right? If I am not supporting the downstream cellular system, then if I just start putting new inputs into that system.

all of these cells that are also energy hungry, I could potentially be fueling some of that senescence, in essence, because of all this NADN putting in.

So to your point, there's replenishment, cause the world is hard and against us, but I know people who are doing NADA infusions every month, plus their subcube, their precursors, and now what have we done to redox?

And so what's the downside here? What can happen? And I feel like that this is where CD38 to some degree, but really NMNT come into the conversation. And this the piece, you mentioned them earlier.

I fell like this, is the peace that a lot of people don't… Either it's not on their radar or they're not fully grasping how important it is. How did these enzymes shape our NAD metabolism and why are they critical?

And we're talking about energy, immunity, which are the core of healthy aging. So let's talk a little bit. Okay, what's the downside? And let's talk about this NMNT because that's the one I think CD38 we get.

It's an enzyme that gets upregulated. We need to suppress it. much more involved than I think people understand, right? That's sort of the moral of this story.

So when you throw all these precursors in, for example, now you've got all of these nicotinamide, because that's the salvage pathway is kicking nicotenamides, and it has to go somewhere.

And so our body has a system and an enzyme to clear that excess nicotonamid called NNMT, Nicotenamine and Methyltransferase. That M is important because the methyl piece means it's involved in methylation.

And so you're actually the way that we're clearing this excess nicotinamide is by using up methyl donors. So that's where the NNMT actually can steal a methyl group from SAMI, right, or universal methyl donor, which is what you need for methylation for things like folate and B12 and choline.

or DNA repair, neurotransmitters, right? I mean, we know a host of things that methylation is important for. So when I steal a methyl group, to help clear out this nicotinamide, then you're hurting your innate methylation processes.

So someone who's a poor methylator already, right? Your COMT people, your MTHFR people. That's going to be extra important because they're already struggling with this and now I've stolen methyl groups from this methyl donor.

And then the other side of that cycle is it's then creating S-adenosyl homocysteine. Now you've created homocysteine, which you need a little bit of, but as you put too much homocysine in, it's a direct inflammatory marker.

And so you're actually feeding inflammation by not regulating this pathway correctly with NNMT. Depleting methyl groups, to your point, a lot of people have impaired methylation and the last thing they need is to lose to be depleting their methyl group.

So should people be supporting methylation at the same time as they're using these supplements? Like at some level, if you're taking an NAD supplement, do you need to providing methyl groups?

And what would that look like to you? Yes, I think that that methylation story is an untold story of NAD. So if you're going to do NADA or infusions or precursors, making sure that you are supporting the methylated side as well.

And then the supplement that I know of that works directly on this is called 1MNA. The reason 1 MNA is involved is because it's the body's self-regulating tool to blunt and block NNMT.

So NNMT up rises, 1MNA uprises, tones down NMNT. But we can't keep up with that naturally. So when we overstimulate NNT, then having supplemental 1 MNA to help block N and M T and then now you're supporting that methylation properly.

Right, because you're no longer depleting it. Yeah. So you can actually block NNMT with 1MNA, just like you could block CD38 with some of these polyphenols like apigenin and others that really sort of go in place of where that enzyme is trying to catalyze.

Interesting. I know that when I get my NADIVs, we have methyl support. like there's in the IV or in a separate IV bag, there is going to be methylation support.

Right. And that means they know a little bit more about what they're doing. Oh, they do know what their doing? I figured that out a long time ago. I kind of avoid the classic kind-of run-the-mill IV lounge and tend to go to people who have studied pathways.

have a deep understanding of what they're doing. Well, and it's interesting too, kind of on the same vein, right? Methylation and neurotransmitters. So when people do an IV, sometimes when they do say afterwards that they feel this euphoric sentiment, it is actually in part because you're slowing down the clearance, you are slowing the methylation of those neurottransmitter.

Because now you've got these dopaminergic things in your brain for longer, then you will feel that way. So it's actually because of the methylation sometimes that you're getting that feeling.

And it's a temporary state of affairs. Like, let's get there. So I think it is interesting what you mentioned about the NADIVs, how really is as a pulse, it can help to, you know, as once in a blue moon, like once-in-a-while, in my case it was twice a year pulse.

You know and I'm in 60s so I feel like at my stage of life it appropriate for me every once and a while to kind of overfill the bucket in, a smart way to just to bring better balance to a system that might be falling out of balance.

It falls, it's almost like my banking system is falling behind a little bit. So I'm repaying debt, if you will. Yeah. And that's where like, I always, you know, the world is working against us and every year you get older, and the word is against you more.

That is aging, right? And so I think when you are older or you have some illness that is higher fashion, you do need to replenish. You do to give yourself additional support.

100%. So you've described, and you talked about it a little bit, but maybe go into it in a different way. So, so you described the NAD pathway really as an ecosystem, not a linear pathway.

And I feel like people, the way we think is linear.

Precursors, IV NAD, and Methylation Support

We, we go, oh, it goes from this to this, to and yet it's an ecosystem. I think we're going to end up talking again about CD38. Maybe let's repaint that picture for people so they get a real clarity over all the circular processes here, just to bring it back.

To answer the question about ecosystem, one of the Total misconceptions is people think of NAD as a molecule,

right? Like they're like, N. A. D. is a thing.

It's a supplement. Its an infusion. No, you're spot on. it's an ecosystem and a very complex one at that. And so we talked about the salvage pathway, but there's actually three pathways that you can get any D from.

Right. and salvaged. There's the de novo pathway. Um, and then there is the price handler pathway and they all work differently. and kind of take different inputs.

And so you can get NAD from those first two, from outside, you know, what you ingest, and then from the salvage pathway, that's that recycling. So all these metabolites have a certain role in these pathways.

The salvaged, then you create the nicotinamide, nicotinamide can turn into NAD. N AD plus then helps to catalyze electron transport. The sort of subset of that is the methylation pathway.

So there's like a picture in my head where there is these two paths that come in. That's from the outside in, then you have this little circle of salvage.

that's the saving and the reusing. Then you Have methylation, which is monitored in part by N A D. And then your ATP over here on the far side, because that what's That's the more linear part, right?

Where you're jumping down through these complexes to create it. It's oversimplified, but… No, I have the exact same picture in my head. The salvage pathway is a circle.

biases here. And then which again is grossly oversimplified guys, but it's that's the right thing of like your sirtuins and your parts like fighting off your CD 38. Right.

And sometimes they're successful and sometimes, they are not. But anyway, I think that it's important to kind of repaint that picture so that people really get that there's more complexity here than just bringing an input in.

I mean, in a world where there is so much hype in the longevity space, there are so many contradictory information. And I don't even know that the research is contradictory.

I just feel like people go in, grab what they think they want, and really push that without always talking about the whole picture. accessible to people.

There's a tendency to oversimplify narratives. How do you personally filter science from the noise? How did you cut through that and do have any advice for people on that?

Because I think that's where it's just so hard for. I feel for them. And frankly, I even get caught in it sometimes. So what's your best suggestion for us?

Yeah. I sit in a room with a lot of doctors with different opinions. It's always, how do you make sense of the chaos? I'll start first with the things that people are starting to understand better, which is, look at who funded the study.

If there is a specific study that you're trying to discern. Just because a group funded it with an incentive, I don't think that completely says the hogwash, but just take it with a certain lens at that point.

And then similarly, some of the study design things, that starts to get a little complicated. I think this is why GPT and AI has a really powerful role.

Right? I tell my AI when I act like an unbiased cellular medicine scientist, don't tell me anything that's a lie. Don't extrapolate. Then if you give it all of these directions to be as unbias as possible, it can help you make sense of that, right?

Don't tell me things I want to hear. Tell me what's the actual backed and peer reviewed scientific literature. And so

it's amazing that you have to create those prompts, but it is more amazing.

But you can put in those prompt and then get the quality information you're looking for. Yeah, exactly. Right. That's where like, if I just put an AI and they tell if this is legitimate, I don't even trust that because AI has got its own biases.

I think that's a place. Then the other thing that goes back to what I said at the very beginning, fundamental cellular biology hasn't really changed. We have a lot of data about how does electron transport work?

How does this enzyme do this thing? When you start to understand the cell mechanisms at place, now you can intuitively ask yourself, does this make sense?

Right? Like that's why I like the NAD conversation because it's, okay, now that I start to see that there's this balance and NED and nadh and they're both important.

And all of a sudden I'm like, wait, then maybe it doesn't make to put a whole bunch of something into a system that requires balance. When did MNA break through for you?

When, when did it hit your radar? Because it's a whole new player here. A lot of people don't know about it. It's still pretty fringe. We don' see it in too many places.

I really found out about from you last June when we ran into each other at that one conference. What first made you sit up and go, oh, this is interesting?

Yeah. Great question. So I think Because of the clinic that I was at and the conversations I being a part of, we were talking about redox. Redox has become second nature in my vernacular.

And you can't talk about Redux without talking NAD and NAH. Then we are at a conference where we heard the lecture mention 1MNA as part this NNMT-NAD system.

Really in this light of it could be a molecule that helps us block NNMT and support NAD. And that had never really crossed through to the full language of NAP metabolism yet.

So when we started to go look for it, that's when found that it wasn't available in the States anywhere. Right. Well, first we looked at the research and you're like, well, actually, there's quite a bit of research on 1MNA going back decades and why has no one heard about this?

And then you follow it to Europe and you find some of the original research out of this group in Eastern Europe, and starting to look into that. And so it really was this very organic, like we wanted it for our patients.

We followed the science. we followed with the research. You know, we had to work through some confusion like there always is. and then we connected with a group out in Europe to really help bring it into the States.

And that's inside of our business hat. That's why we started this separate company, because we want to keep the clinic and the business separate in a lot of ways.

The clinic is for clinical and research and patients, and we don't want it to be tied to a bunch of financial incentives. So I really am on the the Business Incubation side.

I'll consult the Clinic on Operations, but that is mainly it at this point. Yeah. Well, and so going back to what M&A, it just seems to solve a problem that we didn't have a solution for before and in many ways.

And so there's emerging research on it and its roles in inflammation, vascular health, metabolic resilience, So what's an insight from that literature that hasn't yet entered the mainstream conversations to think?

So if you look at the earliest research on 1MNA, a lot of it's actually tied to endothelial function and like microvascular function. And it is not totally clear.

I think it still sort of is related to NAD. But when you actually dig, there's a lots of unrelated to any effects of 1 MNA. and this signaling of nitric oxide is part of that.

I didn't think we were going to nitro oxide today. Okay, let's go. We can see through a lot of the literature, this endothelial enhancement. When you start talking about how do you improve fatigue, it's not just because of NAD, but you're also improving micro-vascular chair.

Um, and the, it gets kind of deep into like Cox pathway and nitric oxide signaling and yada, yadda. And I can't honestly speak at the level of those pathways as they can on the others, but think that's something that we take for granted as well as it's not just an NAD boosting molecule.

Um. It has these other completely unrelated effects in the system as. Well, you know, what's interesting about that is I think in human body, I don't think anybody gets to have one job.

Like if you look at any molecule in the body, it never has only one job. It's like there's never one pathway to get to an end. There's redundancies. backups, there's things we don't even know about.

And so to that end, I think that 1M&A starting to elucidate some of the other purposes and uses and reasons why it's important is really, it makes more sense in many ways.

Do we make it? Do we make it? Does our body make? Yeah. Does your body makes it like we do? We make a certain amount of one M&A. At this point, what we're doing is we supplement.

And do we need to supplement one of M and A because of the NAD supplementation or is it also a molecule that gets depleted or it's becoming more challenged or maybe there's more demands on it as we age?

Yes. That's what you should talk about. It's there are more demand on a molecules as age instead of it being depleting. I think in general, the narrative needs to go that way, right?

Like that's really what's happening. Depletion is that more things are demanding its time. Yeah. So yes, question one, one M&A is naturally produced by the body inside of that NNMT cycle.

It's like the counterbalance to NMNT. When NNT goes up, when M and A goes to block N and MT, N N M T goes down, M N A It's when that can't keep up, right?

There's a lot of also rate regulation inside of ourselves. You can only do things so fast. Right. And so that's where we can keep with the amount of NNMT.

to supplement with 1MNA to support that system. Interesting. And so then the 1 MNA, I mean, originally it was discovered because it just a urine biomarker.

It was a proxy that we were looking at to understand B vitamins and other things. Then we realized it actually had all of these implicit benefits. That's when we started to go down the research pathway of it.

And then COVID actually also, there was some studies that came out with one M&A supporting long COVID and a lot of that had to do again with the microvasculature, right, and how the actual vascular system can be improved post-COVID.

Huh. Wow. Okay. I think, I thing my cold is taking up too much space in my brain for real. In case you got, in case the audience hasn't heard the sniffling in the background here, the two of us are fighting through, um, probably we can be, we might actually benefit from an NAD infusion, with a high dose of MNA.

Just to simplify it. Cause I know it's like, and I, dive deep and then you come high. Overall, I think NAD is a system to pay more attention to, to balance NNMT and CD38.

1MNA supports imbalancing NMNT. Apigenin and others support im balancing CD 38. Those naturally restore N. A. D. and we can then occasionally pour more into the top of the bucket when we've blocked the things at the bottom.

I love it. And so my takeaway from our conversation so far is also if I'm going to be using NAD precursors and any NAAD really, one M&A has to part of the equation.

It should be like peanut butter and jelly. What M&A needs to be part of that formula to really help to maintain some balance in the NMNT1M&a? Yep, exactly.

That's kind of the story that I want to bring awareness to is if you're going to support your NAD system with precursors or with infusions, make sure that you are also supporting the downstream metabolites by blocking the bad guys.

1MNA, CD38, and Supporting NAD Balance

And you can do that through 1M&A and then there's others on the other side. You know, from a quantity perspective, it seems to me like you don't need buckets of 1 M& A here.

Like it's, It was interesting to me when I looked at the dosages. I was like, wow, you would almost think, whoa, I'm going to need grams of this. And it's actually not the case.

Although, if we look at dosage on the bottle and where we might want to go at certain times, and maybe you want talk about that a little bit. Are there certain, without being prescriptive, neither of us is a doctor, but But without being prescriptive, are there certain instances where people might need more M&A than they'd think?

Would that show up in some ways in them that they might notice? Yeah, I think so. The bottle single capsule is 58 milligrams and that dose came out of some of the studies did show improvement in fatigue.

at 58 milligrams as sort of the baseline dose. As we've started to use this more and we have gotten feedback from our practitioners and from patients, definitely need more when you're sicker.

I mean, there's safety testing done up to six grams, but I think more in that 200, 250 milligram pulsed when you are at a deficit, that's when we see people talk about the benefits more.

And those are going to be like the anecdotal things that we hear a lot are obviously fatigue, brain fog, anything that kind of is just indicative of mitochondrial dysfunction.

Yeah. But other interesting ones that I've gotten is anywhere that you have a lot of mitochondria. For example, the eyes. We've got a couple of people to tell us it's improved eyesight or it helped with cataracts because of the amount of Mitochondria in the retinas.

I got to question and this research hasn't been done. It's I'm just hypothesizing. I got a question about fertility and also in menopause, where your ovaries are also hugely mitochondria dense.

So helping restore mitochondrial function, you can see improvements there as well. Yeah, it'll be interesting when that research happens, right? I think that as you're talking about this, the brain, heart, ovaries, in men the testes, kidneys, like for chronic kidney disease, these are all organs that are so critical and so dense in mitochondria.

It'll so interesting to see over time as the research develops. Yeah. We're early days and starting to… We got really a lot of research on NAD broadly because people started to realize it's important and just now we're starting to find the next layer of I love it.

Now, if someone wants to know whether their NAD is low, what are the realistic or appropriate ways to assess that? And does knowing truly matter yet? Yeah, I like this question because I think I get this all the time.

Well, how can I measure it? How can There are some groups that are starting to take a more intelligent approach to measuring NAD and NAH ratios, and they say they can get them intercellularly, I think we'll start to learn more.

Right now, a lot of it is at the research level. Again, this is a research-level test, but you can measure the cyclic ADP ribose, which is the measurement of consumption of CD38.

So you can start to get these interesting proxies, but for the lay person, that's not super helpful right now. So the measurements that the biomarkers that you get in general labs that are proxes to help us understand your NAD levels are going to be those ones tied to inflammation and tied the mitochondria function.

Um, so the easy ones, right? Like highly sensitive CRP, homocysteine is a good one because we just talked about with that, uh, methylation. Just to slow down.

If your homocistin is high, then there's a possibility that supporting an AD would be helpful in bringing that down? Exactly. Yup. Nailed it. Yeah. Cause if you have high homocysteines, you likely have up regulation of NNMT, which is consuming your NAD faster.

There you go. Okay. So that would. A way to say, okay, supplement with something to support your NAD. On the 1M&A specifically, we see improvements in homocysteine because of that direct blockage.

That's where it's really the most directly influenced. But then because the CD38 side of it and some of these other enzymes, just general inflammation markers, that's why things like CRP would come in.

Okay. So you're measuring other markers to identify a depletion of NAD. There's no actual, do you think that the, is there an N A D test out there? Is there anybody saying they can measure N.

A. D. We don't have to name names, but what do think of those tests? I mean, there's, uh, people who are saying, they could measure it. Uh, a lot of the ones that previously I've looked at are just like looking at serum levels of any.

which I think that's kind of they're looking at serum levels of NAD plus, because N80 plus is the more stable molecule easier to measure. Right. There is a group that I've started talking more and more with.

They're actually at the conferences that we were just at. That's a European group who has the first group I have talked to that like we understand it.

We think all of this NAD hype is not representative of the full story. And we're looking at NED plus ratio with NAH intracellularly. Wow. That's what they say.

We'll have to see. Yeah. It's currently available in Germany and they're actively talking to a couple of labs here in the States to if they can get those labs to run the assays.

So we'll watch it closely. Yeah. Well, and you know, so the interesting, again, the takeaway NAD, N-A-D-H are in constant flux with each other. So what would be really interesting in a case like that is to do in real time studies to see that ratio while you're getting an infusion.

You know what I mean? Like, don't you think that would be so interesting? Because that really give you insight in terms of how is the cell able to manage that dump, if you will.

Yeah, what happens, right? That honestly would mean if we can get this NAD and ADH test, even if can't get real-time, it'd be cool to it right before an in-fusion and like minutes after an an hour after just to start to understand.

Just to see how's the body managing this. Yeah. How's that? How is the cell able to manage? I think that would be

so interesting. Okay. Let's step away from supplements for a minute and let's talk about what are the highest ROI Go to the entrepreneur brain.

What's the highest return on investment, low cost and free strategies for either preserving or recycling NAD naturally without relying only on supplements?

What should people be doing to support those NADA levels? Yeah. I love talking about supplements. That's our world. As someone who works in cell supplements, I still always say that sleep and exercise are the most potent drugs you can take.

So I'll talk about why specifically for NAD, even though it's a little bit like, yeah, obviously sleep exercise. So sleep, what's really interesting when you start to go into like where sleep comes into the story is you have this enzyme, we didn't even talk about this one, but it's called NAMPT, Namped.

Okay, well we can talk it now. We have a few minutes. Let's do it. But that's one of their main NAD recycling enzymes. So it's what's helping in that salvage pathway and it is actually a clock controlled enzyme.

So, it has, you know, circadian understanding. And so when you sleep, that enzyme is more regulated because you have better circadian functioning. When you are sleeping dysregulated, your salvaged of NAD is also dysregulated.

which is kind of interesting. That is very interesting, but you know, that is one of the few concrete statements on depletion of cellular pathways related to sleep that I've ever heard anybody say on this podcast.

Everybody talks about sleep, it's so important, blah blah, But very rarely has someone said, okay, your NAMPT, which the salvage pathway enzyme, if you're not sleeping, It is not going to be able to do its job.

So you're not really going to be able to salvage your NAD, which means you are going wake up in the morning. And part of the reason why you were so dead tired is you just never got to replenish your nad to recycle it.

Yeah. I mean, exactly. That kind of extends then into exercise too, because another thing that regulates this NAMPT is resistance and anaerobic training.

Those stress signals are helping because a lot of it also has to get into the mild stressors and why hormetic stress is so good. That's part of this whole story that weaves throughout all of that.

But that's the same idea with exercise. You're regulating the salvage of your NAD more efficiently. And so those two things together, you can actually probably do 99% of what all of these supplements are supposed to do.

But I feel with exercise, it bears noting that when you tip over to the opposite side, when your overtraining, essentially what you're doing now is you are overtaxing a system that can't It just can't solve it.

It can keep up. What are the signs of that? I think it's a great call out, just like we can throw this whole redox system out of balance with taking too much of one of these precursors or NAD.

Exercise is the same thing. You're putting a redock stressor on the system. And when you create too many reactive oxygen species with not enough time to recover in between, which is what hard ongoing strenuous exercise is doing.

You're actively creating mild reactive oxygen species, but then they become severe. So what that will do is exactly the same thing. It will throw your redox balance off and your mitochondria won't be able to keep up.

And so you've kind of taxed the mitochondrion versus made them more resilient. That's a little bit, not too much of a good thing, you want resiliency, and you don't want fatigue.

Yeah. Well, you know, all my poor husband, I'm going to throw him under the bus now. He does these, he's a

swimmer. And on Saturday mornings, they have this workout that is insane.

You can find him Saturday afternoon, comatose on the couch. The man literally can't function. I am sitting there going, okay, we need to give you some stuff.

Testing NAD Status and Reading Biomarkers

overtax the system. It literally can't cope anymore. Yup. That's why like ourselves, they want stress and then too much of it or not enough of, it is going to put you into a bad place.

So basically it's not, It's lifestyle. It is lifestyle, yeah. But do you think lifestyle is enough as we're aging? Like for me, right? I'm now becoming poster child, I've just turned 62. For me is sleep and exercise going to be enough?

Managing my stress, my circadian rhythm, which just got shot to hell. going across time zones. Is it going to be enough? I do feel that we get to an age where you can maybe get away with all the lifestyle stuff in your 20s and your 30s to a point.

But once we've tipped over to the other side, is it possible that now we need these supplements to keep us, to hedge everything back into our favor? Yeah, I think it's how I look at it is like there's the sort of three core pillars of sleep, exercise and diet, which we can talk a little bit about diet and that too.

Yeah. Um, but just like we started this conversation with like, we're in a post toxic or post COVID world. We're. Much more toxic world, like it used probably, and this is totally speculative, maybe 80, a hundred years ago, it didn't matter that you were 62. You could do all the lifestyle things and that would work, But we are just up against so much more stressors in our current environment that are trying to age us faster.

So I do think you have to supplement. You're not gonna get everything right. My caveat to that is you also can cycle your supplements. Right? You don't have do everything all the time, 100%. Because that's a little bit of that stress on our system too, right?

Sometimes everybody has it, sometimes it doesn't. So you need that variation because that what builds resiliency. So yes, I do think you can't, you have to have some supplementation as you get deeper into the world to stay healthy.

Yeah. I agree. You know, didn't experiment. Not sure when this podcast will come out, but I didn' experiment this summer. It was kind of inadvertent, But I kind rebelled against myself and basically stopped taking 90% of my supplements.

And I ran a metabolomics test in September. And the doctor that I went through my results with, and it'll come out in a podcast, he was like, holy crap, now your NAD's in the toilet, your glutathione's depleted, like you need to get back on the train.

Which of course, by the time I recorded the podcast with him, I'd already come back onto my stuff anyway. But it was really interesting to me that it actually did show up in this test.

So this conversation around we don't need supplements, we can get everything we need from good lifestyle and food. It takes you so far. I think, to your point, the world is different.

A person in their 60s, one or two generations ago, had very different expectations of how they were going to function and operate in the So, and I'm not sitting here saying everybody needs to be on a $500 a month stack, but I am saying that there are some foundational, here we're talking about foundational nutrients to support cell repair.

And going back to something you said, I think at the very beginning of the podcast, that is that if we can support the cell in producing energy the way that it needs do it by either removing things or adding a few smart elements back in, it will take care of a lot of things downstream.

And so there's other supplements you may not need that are just trying to band-aid a fundamental lack in cellular energy. Yep, exactly. That's really in like the whole, how do you discern what's legit, what not legit?

Those are the questions I asked myself. At what level in the system is this working? Is it working at a top level, middle, or the root level? And that helps you decide what to prioritize.

What's one longevity idea or technology that you believe deserves more attention from the mainstream than it currently gets? We talked about NAD, so I'll sort of leave that as one of my main ones.

I think I've also, and I don't know if this is a good place to segue into it, but I have gotten really fascinated with ketones as well. And I rationale because I've learned more about electron transport and how this whole ATP as our currency and NAD as the transaction system converting all of these different inputs to ATP, and ketones is one of those.

I've gotten much more into that science and research and I think ketones have been really talked about in the performance space for a long time. But I don't think they're getting talked quite enough in longevity space.

Maybe in a keto diet way, but not what high dose, being in ketosis for high-dose ketone can really do for cellular health. Yeah. Well, I mean, we've both been sipping on our, this episode was fueled by ketones.

But I don't want to go too deep in the ketone only because we're running out of time, but I do think it bears mentioning there's keton salts, ketona esters, different types of ketons out there.

You have one that quite apart from working really well, and we'll talk about why it works well. It actually tastes good, which is a shocker in and of itself, because ketones have historically been one of those things where either you're getting this ketone salt, it has some good to it, but it doesn't offer the full package, or you had to block your nose and swallow something that just tastes like jet fuel, pretty much.

I think with kinetic, you've solved that problem. Very quickly, let's give people a list of the benefits of ketones that go beyond performance because I think it has to do with the inflammatory pathways and energy systems as well.

So NADH is one of inputs for electron transport. FADh is another one. Ketones actually help skip a step of NAH converting into ATP. So they're kind of coming in a step later and supporting FADH into ATP.

And why that's really important is because it's giving your mitochondria some relief. Your mitochondrion are actually not having to work quite as hard to make ATP, so when you hear this idea like ketones are more efficient, it is actually because they are helping your Mitochondria to not have to go through every single step of the process to And in doing so, you're letting your mitochondria recover a little bit, or maybe for proper mitophagy to occur.

And so now you've created a more efficient system and then that leads into more of the inflammation benefits and other things like that kind of secondarily.

Lifestyle Strategies for Preserving NAD

But I'll point out why again, the cell is so smart and if we give it the right tools and the fuel, it can self-correct and ketones are a way to do that as well.

You bring up an interesting point in that this is for someone who's not necessarily in ketosis. Exactly. And we're in a world where people are lacking the metabolic flexibility to ever get into ketosis.

And this would be a natural fuel that the body would have access to on a regular basis if we were metabolically flexible, if didn't eat every chance we got.

In a way, I feel like it's bringing back access a molecule that our bodies need, would've historically had access too. A hundred percent, exactly. I mean metabolic flexibility is by definition your body's ability to be flexible in what fuel

source it's using to fuel metabolism.

And we used to have to starve occasionally, and we had ketones to be on board to do that. And now it's hard to get people into a ketotic diet, even myself or people who are healthy and oriented that way.

So why exogenous ketone are nice is because having any ketons on-board is going to helpful in improving metabolic flexibility. you don't have to be above a one millivolt or above 1.5 or whatever ratio that we're saying, having some of that fuel source is going to useful.

And you won't be in a ketotic diet state to do it. Okay. Last question on the ketones is what is the difference between this ketone molecule and some other ones you'll find out on I think the biggest thing to look at when you're looking at the ketones on the market is whether they have the actual BHB, like beta hydroxybutyrate, which is the key tone body, or if they just have what's called 1,3-butanediol, the precursor.

A lot of things claim themselves to be ketone, but they're actually just 1-3 butanidiol which just telling your liver to make its own ketomes. Ketone esters are one of each molecule bound by an ester bond.

So that's where that originally started from. What we figured out with our partners is how to make those two molecules free-floating. You're getting BHB and 1,3-butanediol.

They don't have the esther bond, but the ester bond is what causes the bad taste and some of the other challenges. This tastes great. I'm going to put it out there.

This taste really good. All right. Let's get back to this. So let's go back NAD science for a minute. And so when you look ahead five to 10 years, what do you think is coming in the world of N. A. D.

science that people aren't anticipating yet? What's Courtney seeing down the road here? I think the biggest one is we're going be like, why were we all doing N-A-D-I-Vs all the time?

Like, truly, I mean, we're starting to see it like there's little studies popping up here and there, causing you to ask the question of, hey, maybe this is doing some harm.

And I think 10 years from now, are going to be able to look back and say, Oh, we actually did see that NAD, high doses of NED for certain populations caused increased, you know, risk of X or was bad for people with Y.

And just in general, like maybe we're going to find out that any D infusions were not the most effective compared to other things at replenishing our N80.

That's my overall take. I think we're going to look back and be like, wow, one of the lectures that I hear is about radium. this lecture before. It's like how, how it gets started.

No, this is a quick, quick sign. I hope it makes sense. We used to use radium. Oh yeah. With the people glowing in the dark. Yeah, yeah, it was this elixir, right?

And it actually, a little bit of radion when you look at like radiation therapies and things like that, um, is good, but you actually then we started to say, Oh, we need radian for everything.

And we put radia in our water and we've put radio in, in clothing. It's really bad. People would be glowing thinking they were really doing well. They were developing horrible cancers.

Which brings me to the next one. The next question, which is really, it used to be biohacking, now it's longevity. This is an industry where excitement often outpaces actual evidence.

So how do you balance innovation with scientific rigor? Because that excitement is part of innovation, right? So, how you do balance the innovation and the scientific rigour?

It is the challenge. And I think what we have to continually ask ourselves is, how are we pushing forward with the science we already know? And are working against that or are building upon that?

I'm not cowboy enough to want to just really do something that I have no idea what's happening. I appreciate those people. They do draw the signs forward in both good and bad ways.

To balance it, Tend to lean on how do you do intelligent innovation or intentional innovation? We do have a lot of information, AIs giving us even more access to information.

Let's look at the foundations that we know and build upon it, not ignore it. And I think sometimes we ignore what we already know. Yeah, I think that's great.

I also think what you said earlier about AI, it's going to be about using AI intelligently and asking it to create the right filters for the answers that we're asking for.

Because I, think AI overall in our industry is going be a good thing. It's gonna allow us to connect dots that didn't even know existed.

Ketones, Future NAD Science, and Closing Thoughts

But it's buyer beware. You've got to be asking the right questions and pushing it to create the filters that we need to put in to avoid with something that's all hype without substance.

Yeah. I encourage everyone. There's some of the baked in, you can tell your AI to answer every question in a certain way. Like, go add that into your baseline for your AI.

Always, you know, call out caveats or tell me when you're extrapolating. And then at least you are aware to make your own decisions. Love it. All right.

When you imagine your future self decades from now, what impact do you hope your work in longevity will have had? asking all sorts of deep questions. I know.

Well, that's what people want. People are like, I'm an A, blah, what's Courtney hoping to make? What's your impact going to be? Yeah, I love it. I truly have always kind of seen my role as helping to bring the science to reality.

And that's probably a facet of sitting in these hats between, you know, doctor and businessman. Yeah. Also sort of an innate mediation mindset. But what I would hope 10 years from now is that I brought people into a little bit more understanding so that they can make more educated decisions for themselves.

If you don't agree with what I have to say, that's great. At least hopefully you're asking more questions. And that everything I try to bring into the world is just to help educate people to ask better questions to improve their own health.

Love it. All right. What's one belief you hold about aging or metabolic health today that you suspect may evolve or be completely overturned in the future?

Is there something we're holding right now that you think, yeah, I don't think we quite have it right yet, and we are going to need some time to figure it out?

It's starting, but one of the things that I think is inverting barely to start, that i hope will continue to change, is we, we both are biohackers, i think were moving less into bio hacking and more into sustainable lifestyle.

And that's community, right? You're seeing the studies come out about what it means to have good friends. We're losing community in a lot of ways. That's having whole meals that we cook ourselves.

I think going a little bit back to the basics, without losing the innovations that have been helpful. But that's what I hope we will look back and say, hey, we've got a ton of biohacking and innovation to raise awareness.

Now let's go integrate that into what we have known for thousands of years. I think it's happening, honestly. People are really starting to happen. And part of that is people saying nervous system, nervous regulation.

How do you regulate your nervous systems? A gadget might help, but being around other people, hugging a dog, hugging a loved one, like basic co-regulation, these are the things that really land.

All right, last question. If you could offer your younger self, who would have been 10, I guess, one insight about ambition, entrepreneurship, and navigating complex scientific fields, what would it be?

I think the biggest thing is having the confidence to Give your opinion, but then have it be broken. I think that's a lot of, you know, as you grow up in this world, especially with a lotta big opinions being yelled at you from every direction.

You stay in the middle of it. And I think it's really easy to, like me, even five years ago, when I really got back into this industry, I was a lot more timid and like, i don't have a big opinion yet.

What can I proclaim out here in this with everybody else yelling about something? And i think its okay to say i dont know, and here's what i'm learning.

Or to just say this is what I do know. And to really stand behind that. But then five year from now maybe research will break that So it's a little bit of like the balance of confidence and humility that is just a hard, hard thing as you're around all these different people that are really smart with big ideas.

Love it. That's I like that the bounce between confidence in humility is I think the world a lot of people in the World could use a bit more of that. All right, Ms.

Courtney Von Busen, where can people find you, learn more? We will have a link in the show notes, folks. And from that link, you can get your hands on the 1M&A and the ketone product we're talking about.

There'll be a discount code in there. The link is onerous to say the least, so I can't read it out. the code will be not 10. But in meantime, Courtney, Where can People Find You?

And basically follow your learning journey. How can we follow along here? Yeah, so I mean, you can follow me on Instagram at cvanbus, V-A-N-B-U-S-E, or add me at LinkedIn.

And then the company that I helped spin out and run is called Longevity Launch Labs, and that is longevitylaunch.com. That's where some of our different businesses that you kind of navigate to from there.

Amazing. Well, thank you so much for today. I feel like the two of us really battled through this one. Our cold on top of NAD systems is a little bit of a challenge.

Yeah, I'm going to go take some more precursors and M&A and pound my ketones for the rest of the day. Hopefully we got enough of core info out for everybody.

I think we did. You did a great job. So thank you so much, Courtney. And it's been a pleasure and we will talk again soon, I'm sure. Well, thank