Introduction to Plasmalogens

Doctor Jeffrey Gladden. And we're here, as usual, discussing leveraging AI to outlive disease and how to live young for a lifetime. And today, I'm honored to really have with us a pioneer in the field of neurology, a pioneer in the field of understanding of cold plasma allergens and their impact on neurological health.

Doctor. Dan. Good. Now. So, Dan, it's great to see you again. Great to see you, Jeff. Happy to be here. Yeah. Beautiful. So, you know, when I first heard about some of the work you were doing a few years back, I was intrigued to hear about this new kind of healthy fat called plasma allergens. Right?

We hear about C15 these days as being a healthy fat, which is interesting in and of itself, but plasma allergens are another healthy fat. Do you want to tell us a little bit about plasma allergens and the role they play in health?

Yeah. So mountains are one of probably the most important nutrient that nobody has ever heard of, although it's been around for a long time. So the molecule plasma cells have been discovered back in the early 1920s actually.

And they because their critical membrane lipid, they're made by the human body, they're a large component of the 30 trillion cells of your body. So the what makes us not a bowl of soup, if you will, is the compartmentalization and the cellular structure of the human body from your heart to your brain to your kidneys or your blood cells, even.

And what allows that to happen is that the compartmentalization. So we do that by having a cell, and that cell is a three dimensional sphere cube, if you will.

Cell Membranes and Aging

And what defines that is the the walls of that sphere is a phospholipid bilayer made up of fat, lipids, basically these kind of soap like molecules that have a polar head group and a nonpolar tail, and they form what's called a phospholipid bilayer.

And that's what separates one cell from another. But it also allows us to compartmentalize inside our cells so that things can happen inside the mitochondria in the piroxicam and endoplasmic reticulum in the nucleus.

So all these individual components of your cell are equally compartmentalized by a membrane barrier. It's kind of the walls of the house if you're listening to this.

This also lipid membrane is really the walls of the house or it's really more of the walls of the submarine. Right. Because you've got this, this, cell that's either connected to other cells or it's floating in the blood or whatever, but it's it's really the walls of the house.

And you probably have heard things like phosphate titled choline and phosphate title serine. These are some of the phosphate vital molecules. But he's talking about phosphate and lipids that actually have, one side that's basically dissolved in water and the other side that repels water.

And so you put the the sides together that repel water, and you end up with a wall that keeps, you know, the cytoplasm in and the, the blood circulation out, so to speak.

So now you've just created a wall for your home. Yeah, exactly. And when people talk about proteins or receptors and all the different drugs that we develop over the years for antipsychotics to beta blockers, all these things, we talk about a protein.

These proteins are just they're not floating around in space. They're actually embedded in these membranes.

That's what holds these proteins in place right.

Think of them like walls or vents in your house and walls as well. So the function of these proteins is dependent upon the matrix in which they are embedded.

And that matrix changes with age and become stiff. And so the doors don't open and close properly, they get stuck open or they get stuck closed or the, the, the iron pores allow materials to pass in and out of these different subcellular compartments or into one cell versus another.

People talk about leaky gut or leaky blood brain barrier. Okay, that is all membrane related. Adhesion and connectivity. This is a. This is a really cool thing you're talking about.

Just interrupt for a second. So the audience understands that, the walls of these cells, sort of shift in their, in their stiffness, in their compliance, in their structure, the molecules that are make them up.

And there's a really fascinating story about Alzheimer's. Right. And how, whether you have cholesterol buildup because of ApoE4 and your membranes, that stiffens up the membrane and therefore, all of a sudden you're making beta amyloid instead of alpha amyloid.

So, so just to understand that how these, enzymes are, are positioned inside these cell membranes or the walls of the house has a big impact on what actually happens.

And so that's what we're talking about here. Yeah. Exactly. And they're not all the same. Okay. So you have some walls that are really thick and impervious.

They're like the coating of the wires in your wall. Like they're we call it the myelin sheath that protects all of our neurons. And breaks their axons and allows the connectivity to be like when you when I move my finger and that signal goes from my brain to my spinal cord to my finger that moves very, very fast.

And so that type of membrane, that type of cell is actually very, very thick and compact and and fundamentally impervious is there for protection purposes versus the type of membrane and cell that is occurring at the actual light switch and actually at the light bulb where activity is happening.

And those are with those membranes have to open up. They release the neurotransmitters. They're highly dynamic. And so the structure of your cell membranes is quite dynamic.

You talk about at rear sclerosis and reverse cholesterol transport and how we can clear stuff out of the foamy macrophages of a, of a sporadic plaque, for example.

That's all those things will have different aspects of it. And when you talk about your immune system and people talk about inflammation and how our immune system gets degraded with age, a lot of that and we've got people talking about oxidative stress, which is, you know, a reactive oxygen species.

Most these things are manifested by some level of membrane interaction. So a lot of the, the age related, diseases, virtually virtually all neurological diseases are, accelerated due to inflammation, microglial inflammation.

And what what causes those microvilli to inflame and be activated is the approximation of the membranes. So when you have oxidative stress. So everyone's talking about getting an antioxidant.

All these different things that we talk about mitochondria function fundamentally that is designed to protect the body from oxygen okay.

Oxidative Stress and Brain Health

So people it's interesting that the more you get involved in human physiology, especially the brain physiology, the

more inspiring it really is because you think about the human body like you are a bio reactor.

We breathe oxygen in through our lungs and we convert and we eat hydrocarbons in our food, whether it's a protein or fat or sugar. And we burn that we combusted into carbon dioxide in water the same way a furnace does.

That is a highly oxidative process, right? And we have to do that in such a way that our body doesn't blow up. And so we have these control mechanisms that prevent this oxidative stress to get out of control.

Now when it does get out of control, the oxygen, the same oxygen that oxidizes a paint on your house or your car, that's the same oxygen is going in and out of your body, but your body has these cells that deal with it, the action of your membranes or oxidation.

And that is what stimulates the microglial activation and the inflammatory cascades and so on and so forth. So back to the plasma allergens. So plasma mountains are one of those unique lipids that your body makes a whole bunch of.

And it's critical for the myelination that that white, that white matter or that coating is it of the economic lipids is like 80% of it is plasma in the synaptic membranes of your brain.

Your neuromuscular junction, half of the 50% of the membrane of the lipids in your heart are plasma. And what makes a plasma engine unique is it's the body's primary defense against oxidative stress.

At first and foremost, it's cannon fodder. Okay. We we basically make these plasma engines and we send them out to get killed. Okay. And what's unique about them is that the very last step in their manufacture creates this bond called an vinyl ether bond, which is exquisitely sensitive to peroxides and acids.

And it actually acts like a fuze. It actually blows up. So a lot of times when people talk about antioxidants or, you know, flavonoids and things, those are often what you call hot potato holders, okay.

They take a free electron or reactive oxygen species, and this holds it for a while until a system of your body can take care of it. Plasma is actually neutralize reactive oxygen species completely unlike and your body has an ability to restore them.

So the plasma you can think you can think of plasma balances is kind of the maybe one of the ultimate receptors. You know, there's one of the we're oxygen reactive species are turned back into water.

But for some of them that aren't turned back into water, this would be kind of like the ultimate resting ground for them. Is that what we're saying? That they're. Yeah. And in what your body.

So your body, these 30 trillion cells of your body, all of which with this compact membrane contains a whole bunch of these plasma. And so when you have an inflammation event, it releases these plasma engines from the membrane to douse the flames.

This is why we have all these issues with long Covid in the myocarditis. Because your heart membranes contain like 50% plasminogen. So when the heart becomes inflamed, it starts pumping all these plasma engines out of the heart to basically protect it from dying.

With the premise that after this inflammation event has been resolved, the body will gradually rebuild up its plasma and stores. And the the the strange thing about plasma engines is that this is their bond that makes them so exquisitely powerful in reducing these oxidative stress markers is that it doesn't survive digestion, so you can't eat them.

So you think, wow, that's great. Like, you know, if 50% of my heart has plasma allergies, my muscles have plasma allergies. So if I'm eating animal products, I should be getting my.

Is there they can't survive the hydrochloric acid in your stomach. So the only type of plasma allergens that we can get nutritionally are called plasma gene precursors.

And we we get them from, breast milk to begin with. So the reason why breast feeding is so important and actually is even at the exclusive breastfeeding for the first six months of birth, is that breast milk in human breast milk versus cows milk and other types of milk is unique, and it contains high levels of plasma allergen precursors.

These are alkyl glycerol with the B technical has the omega nine oleic acid on it, which is the type of plasma engine used to build the myelin coating and myelin sheath.

Fascinating. So this is why it's said that breastfeeding is critical for brain formation, nervous system formation, motor activity, etc., etc., right?

Not only intelligence. Yeah, absolutely. Intelligence. So children that are breastfed have a far lower risk of getting autism. Their myelination development is far more improved from advanced MRI technologies.

We can measure their cognitive status is improved. And likewise when children are born prematurely, they're born primarily before because the myelination of the human brain starts with the third trimester.

Plasmalogens, Breastfeeding, and Myelination

And so you and I are sitting here with 60% of our brain called white matter, which is at myelin, but we're born. We have less than, less than 5% of our brain has myelin.

So the first couple of years of life, there is a massive demand on the human brain and human neurological system to build these myelination codings. And what's really unique about what's so exquisitely cool.

So you let me just interrupt so you could you could also make a case for breastfeeding until you're 2 or 3. Is what you're saying, right, to get these precursors?

Absolutely. Yeah, absolutely. And then now that we have the precursors available nutritionally, you know, obviously for our programs and autism and look at distances and then as we get older in life, okay, our body starts next to your peak, like your brain actually developmentally peaks in its 40s and 50s.

Okay. It gets the maximum myelination typically at that rate. And you can think of myelination as learning. And that's what's so cool about it. So you're born with virtually no myelination which means you're, you're you're a blank slate when you get born.

Okay. So as you learn something and as you develop cognitive skills or motor skills, that creates a signal like you basically it's like, okay, at one end of a neuron has been connected to another neuron and electrical activity starts passing through that.

And when that happens, it stimulates the cell that makes the myelin sheath the cell called an oligodendrocyte. And it stimulates it. So your physiological activity, your functional, the way you functionally put you put functional demands on your body changes the neurological structure.

And that is locked down with this myelination process. So our ability to learn and and retain information is entirely dependent upon the myelination of the axons that are becoming.

Activated with this kind of part of the hard wiring that occurs when you're, you know, repetitively, using a particular neural circuit, say, to learn how to walk or something like that. And sort of solidifies that and makes it more prone.

It's perspective. Okay. So you can you can actually be train yourself in negative ways. So obsessive compulsive disorder, anxiety. So anything that you create a stronger and stronger habitual reinforcement gets stronger and stronger is the brain isn't smart.

You can't tell what's good and bad. Okay. What it does, it adapts. Okay. Its job is to keep you alive in whatever environment you put it in. Right? And it will adapt to that environment as best it can.

Well, that's an interesting thing because when we think about certainly things like autism or even psychological, maladies, like you know, anxiety, depression, PTSD, things like that, you can see why it's difficult to kind of reprogram those things.

And yet people do effectively reprogram them through a combination of interventions. It's it's really curious to do what you're saying is you're kind of myelinated new pathways and to actually replace the old pathways.

Correct. Yeah. Exactly. Right. And what what really disrupts our ability to learn and build these pathways is neurological inflammation and neural inflammation is something that is dramatically underdiagnosed, underappreciated, you know, concussions, long term effects from concussions, long term effects from a brain inflammatory event.

The brain, because it's so adaptive, we learn, it learns workarounds even though the insult doesn't disappear. This is why these athletes that are the the prime human specimens of our world, they age so poorly because they have, you know, if they've had head injuries and even if they don't know they've had them. Right.

Like you think it's just because sometimes there's a gentle bump on the head can create it. Sometimes it has to take a severe bump in the head. Right.

And that inflammation doesn't really go away. And there's been lots of studies looking at return to play designation. Right. So athletes get a concussion.

They have the symptoms of a concussion. They gradually recover. They do a physical. They do a basically a functional test. They say, okay, you're good to go.

But if you look at them and I'm right, they're not good to go, okay. The brain is still very inflamed. And until like an autistic child with autism, when you look at their brain, when they're in their 40s and 50s, they have almost the same level of information that they had when they was five years old.

Okay. It's just they basically have found a way around it. And so a lot of the, a lot of the behavior, like the stimming and things that people do or these, these stereotypical behaviors are designed that we figure ways to survive.

Right. And and sometimes that's what we call a mal adoption. So yeah, it's pretty amazing stuff. So plasminogen plays such a critical role. And just from a pure, you know, epidemiological diagnostic perspective, if you will, there's a 30 year difference in lifespan based upon the level of plasma which is in your blood. Is that severe?

Like if you look at five year survival, we did a big, long study with, rush University of Chicago, and this is 1260 sub subjects measured over multiple years.

And they all enter these programs cognitively normal so we can track when they get dementia. We can track when they get Parkinson's. We can track when they die.

And it turns out that if you take a 65 year old with low plasma and look at the five year mortality rates, okay, the five year mortality rate of a 65 year old with low plasma margins in the blood is the same as the five year mortality rate of a 95 year old with high plasma outcomes.

So you take two people a 95 year old has with high plasma margins in the blood, has the same probability of making it to their 100th birthday. As a 65 year old with low plasma margin has a making it to their 70th birthday.

Wow, that is amazingly shocking number. That's shocking. That's a shocking thing. That's really shocking. So then the question becomes, well, where are the plasma origins made?

Learning, Inflammation, and Neurological Decline

How do we make them and how do we make more of them? Right, right. So what's interesting about it is, you know, it's like your body makes them own, so, so you want to stimulate them.

But again, like a lot of our vitamins, a lot of our nutrition, there's a limit to what your body can perform. And you want to help it along. So all the things that you normally say, okay, when we say eat well, exercise, those are good things.

So the plasma changes are made in an organelle called your prox zone. So when I talked earlier about your body taking oxygen and hydrocarbons and burning energy, there's basically two cells and your two types of organelles in your cells that do that.

One is your mitochondria, which most people haven't heard about. And mitochondria are your we call catabolic. They're they're pure energy hydrocarbon oxygen supposed to come in carbon dioxide.

Water and energy comes out. That's it. Can you mitochondria is fundamentally a pure nuclear reactor in all your cells. And there's many of them. Every single cell.

Your proxies also do this. Beta oxidation which basically breaks down these, these hydrocarbons. But it uses it for anabolic purposes. So the the breakdown of these building blocks are used in the prox zone to make your cholesterol, your steroids, your hormones, and makes your plasma allergens.

And so this is your anabolic part. It's the building part because you think about yourself like man, you think it's you know, you're not supposed to. But I do like a milkshake and a hamburger, and your body makes heart material and hair and bone, like, you know, make you, you know, think about what your body makes with this crap that we feed ourselves sometimes. Right.

And so the system does that. That's where plasma engines make. So what's interesting about bruxism is they are stimulated by resistance training, exercise, proper diet.

I go like, when you're in the fasting states, some people do keto diet a lot of the benefit of a keto diet or even a modified keto. Like, I'm not a big, huge, pure keto fan.

I think the body should go through cycles every day. But if you're you should have a proper fasting period, your body should be in that fasting period because it's during the fasting period that your body actually builds things, which is why you're at night. Like, right?

So in the morning you have your breakfast, you're breaking your fast in the morning, but at night time you're typically fasting while you're sleeping and while you're sleeping during your fasting period, you're building.

Fasting is the period when your body actually does is anabolic work. It actually build stuff. When you're the fed state, it's active. It's actually consuming energy.

And it's typically not building things. Which is why when you talk about exercise, I always tell people, you know, exercise is bad for you. Recovering from exercise is good for you, right?

Right. And so that's an interesting thing. So the audience what he's saying there is that while you're exercising you're actually breaking down the muscle.

It's in the recovery phase that you're actually building the strength, whether it's cardiovascular capacity or, you know, strength in your arms are bonds.

So that's what he's saying. But he's not saying don't exercise. No. Well, see what you're doing in your exercise, is it. You're tricking the body. This is us as a steward of our body.

We're tricking the body into thinking that it lives in an environment that has a higher functional demand than it actually has. As you and I are sitting here, we don't need a whole bunch of muscles have this conversation.

Right? And if we're working on a computer so the body will adapt to whatever you have, whatever it thinks you're in. And likewise, when people look at these aging clocks and they think, okay, there's a predictability of aging, what that really is, is, is the body adjusting to your functional capacity.

Okay. It's the cart comes after the horse, not before the horse. And so your as you improve your functionality, okay. As you improve the capacity of you yourself to do work which, which is not just your physiology training but your nutritional training.

As your body has higher and higher levels of function, your genetics open up to perform those functions. And as you age, if you become less and less physically active and your physiological, your genetics, adapt to that and adjust to your level of function.

And so that's why back to where plasma mountains are made. They're made in these proxy zones. And so these things that so if you have good triglycerides in your blood you have good HDL levels in your blood okay. All the things that and you've got cholesterol, good cholesterol, glucose regulation, the things that you all aspire to through are nutrition and exercise programs.

Those individuals that have that will have the highest levels of plasma allergies in their blood because their proxies ohms, are being activated and being used efficiently.

Does cardiovascular exercise stimulate paroxysms? Is there more resistance training? Resistance training? Cardiovascular is for mitochondrial okay. What you're doing when you're what you're doing, when you're doing cardiovascular training is what you're doing is you're you're increasing the oxygen consumption of the body, okay?

What you're doing is you're doing prolonged physical activity in what you're basically doing. You're forcing the body to use more and more oxygen. And the higher levels of oxygen utilization means that the cell, the body will adapt to that.

And how it adapts to that is by making more mitochondria more efficient. Mitochondria. So cardiovascular training is all about, mitochondrial enhancement and mitochondrial biogenesis.

Resistance training is about muscle activity. And this is a more important part of aging. People have to really stay focused on their skeletal muscle mass, okay.

Plasmalogen Levels and Longevity

Because your skeletal muscle mass is what prevents you from getting diabetes. It's your yin and yang. Yang. Okay? And you think about, you know, there's basically two cell types that you don't ever get cancer.

You never get cancer of your muscles. You never get cancer of your heart. These are your cells of these are the type of cells that use fatty acids primarily for their energy source and the the main drag.

So getting your triglycerides down. So resistance training that's what gets your your fasting triglycerides low. But as you get older if you lose your muscle mass that yin and yang goes out of balance.

And the the fatty acid metabolism of your muscles goes down, and it forces the cells of your body that normally use more of a sugar base. They get started.

They have they get bombarded with excess, fatty acids. And so they shut off their glucose. And so your glucose levels go up in your blood. So become type two diabetic and your body says, well, I can't have all this glucose in my blood, so I'm going to pump more insulin.

You're going to take this glucose and you're going to like it. Right. And so your insulin levels go up to forces your cells to. And so that's why virtually all type two diabetes can be cured by nutrition and exercise.

Right. It's because fundamentally what it does is it restores your muscle balance in your system. And it it reduces the it allows the rest of your cells, the body to, to to absorb glucose.

Appropriate appropriately. Yeah. What we find too is that the reality of that for people as they age is that without hormone replacement therapy, and sometimes some peptides to actually stimulate growth hormone release, we never see them ever be able to build back the same kind of muscle they had before.

But if you if you optimize estrogen and progesterone and testosterone and DHEA, and you intermittently use some growth hormone releasing peptides, now all of a sudden you've got the anabolic male you, you had when you were younger to actually be able to make that muscle.

And then you can, you know, use it's kind of a. Really big factor in that too, is your, leucine. Can we talk about branching in amino acid? But it's really leucine itself like loose.

Just taking pure leucine increases your beta hydroxybutyrate levels, you know, reduces sarcopenia. It's so protein leucine and rich protein, you know, is a critical component of aging.

But that so this goes back to what you say with hormones. So when you talk about aging and your body has what, what what we do know scientifically extremely well.

Yeah, we actually do know what optimal physiology is. Okay. And so we because every time I try to diagnose the Parkinson's or try to diagnose a disease, I'm always comparing it to a healthy normal.

So all the different diseases that have ever been studied for diagnostic purposes, they all have control arms. And so what normal is, is actually the most robustly determined measure of human physiology.

And we always try to figure out we we focus on the diagnosis of disease when we should just be focusing on diagnosing deviation from normality. Okay. We don't need it.

So if your homocysteine levels are elevated, I don't need to say, oh, this is diagnostic of heart disease or you got a high risk of, of Alzheimer's, which is all true, but it really means is, hey, your methyltransferase system is overwhelmed and it's not working properly.

Makes it okay. So we and then we can say same thing with hormone management. Like if your body is supposed to have a certain level of hormones to perform a certain function, then give your body what it needs to do its job.

How Plasmalogens Are Made and Used

Yeah. If it don't, don't force it to do its job without the appropriate materials. And this is where the plasminogen precursors come in. This is what the other strategic nutrition comes in.

And then later on when you want to do advanced health and your body has a physiological capacity to actually respond to the stimulus you're giving it, which is no different than exercising, right?

You can't take some malnourished person and put them in boot camp and get a soldier, right? Like you like your you can't force a system to perform if it doesn't have the the basic ingredients to do that.

And so all this stuff, all the fancy stuff that we have now, we have peptides, we have hormones, we have exosomes. These are signaling. These are these are things that can stimulate the body to a higher level of function.

But it predicated on the ability, the underlying underlying physiology to actually perform what's being asked of it.

And this is where the plasminogen precursors come in because you just can't make enough of them as you get older.

And so this is what I've shown with my own brain and how we can restore neurological function. And you can reverse physiologically. Tell us a little bit about the precursors.

So they're they're they're a prodrug products that you have a program. Sort of like precursors, if you will. Prodrome being a precursor. So a prodrome neuro prodrome glia and some other products, you want to just tell the audience about those for a minute because they're they can be quite useful for people.

So yeah, they're, they're really quite amazing. So I invented these molecules back in 2006. Okay. So I'm not the inventor of mountains. Of course, they were invented in the 1920s.

And they really became critical in the 70s when we found these rare diseases in children had proximal defects like, oh, well, here's ref sums and certainly RCB rhizome dysplasia punk.

Tada! So we know if you are born with a genetic mutation in your ability to make plasma allergens, you die. Basically, the body cannot survive without fully functioning as much capacity.

And we've done the postmortem studies of humans showing that cognitive function is dramatically so. It's critically associated with the level of plasma allergens in your brain.

Two main categories. There's what we consult the protective type membranes, which is the omega nine oleic acid. It's the glia. It's designed to go right into your oligodendrocytes.

And for the cells to make their their myelin. You can think of the plasminogen precursors like L-dopa for Parkinson's okay. So Parkinson's is a disease where the substantia nigra and the basal ganglia become deficient in dopamine because of neurodegeneration of dopamine cells.

And one of the most miraculous discoveries of medicine in the last century has been L-dopa. For Parkinson's. It's one of the most amazing things. But what's interesting is that we don't give people dopamine, so they're actually deficient in dopamine, not L-dopa.

You give them a precursor. We give them a precursor because it's a pre. So it's the precursor goes into the dopamine cells. And the dopamine cells can actually take the L-dopa and convert it into dopamine.

So the cells who need the dopamine can actually make it. The cells who don't don't get bombarded with it because major precursors work exactly the same way.

So they're actually in your blood levels to go up. But that's not the point. The point is not to get high blood levels. Low levels come after the fact. That's what your body.

That's that's what your body says. I have lots and I'm sharing it. The precursor goes into the cell, into the oligodendrocyte, into the cardiac myocytes, into your lung cells, into your synapses.

And in situ is converted to the type of plasma that that cell needs in that location. So the first one is you'll make a nine and it's designed for the all good inter sites of your brain, Schwann cells of your periphery in your heart for sure.

And and that is a protective molecule, the omega three plasminogen which is program neuro which is very powerful. It's got DHEA was highly purified. It's the most purified in the world.

From, from other than a pure pharmaceutical grade, you know, analytical standard, if you will. And so it has a plasminogen backbone, but it's designed for your synapses, your neuromuscular junction, your it helps lung function.

And so it goes into the because it provides that membrane flexibility and membrane, the ability of the membrane to release neurotransmitters and go back the the dynamic activity of the human brain really is unfathomable to most people.

You have these your brain runs and your neurological system runs with the Hertz rate around 50 to 80, which means your neurons are firing between 50 and 80 times per second.

And what that means is that the membranes are actually bursting and reforming, that often. And you have many, many billions of cells. You have even multiple billions of these synapses.

And within those synapses, each of those contain these little vesicles. And these little vesicles are the actual things that contain neurotransmitters.

And there were actually fuze to the membrane, released their contents and get reformed again. And if you consider each vesicle a grain of sand, your brain has same number of of vesicles as there are grains of sand in the Hoover Dam well.

Precursors, Brain Function, and Cholesterol Transport

And those grains of sand are bursting and reforming 50 to 100 times per second as we sit here. And that's and that's what gives the human brain such enormous computing power, because it's not even because it's not a binary system either.

It's a scalar system. So there's a triggering. So there's multiple little, contributors before an action potential gets released. And that's why the, the actual computing power, if you take a look at it from a Hertz rate, you're talking thousands of gigahertz, like more than virtually all computers manufactured on Earth in a given year is what one human brain has.

The capacity for which gives us this kind of consciousness. So that's the functionality of your brain. So when you talk about longevity and aging, maintaining that vision like the, the, the, the oxidative stress of, of, of light, okay.

That's why our light in our occipital cortex is one of the most robustly declining with age anyways. So I'm babbling so that so the plasma digital these two precursors are designed for two critical components of your system.

The omega three is also for the reverse cholesterol transport. So getting so maintaining cholesterol regulation as we get older. You mentioned the AP for genotype.

The omega three is basically the antidote to having E4. And that would be the that would be the glia. Basically I don't know. ADHD. Neuro because your your cholesterol transport through your cells are dependent upon a system called cholesterol is verification.

And there's an enzyme called soluble, you know, sterile OCD transferase or a cat. They also call it and that's what actually drives reverse cholesterol transport.

That's what actually gets rid of forming macrophages for atherosclerosis. That enzyme is exquisitely sensitive to the amount of de plasma allergens in the membrane.

So we can turn that on an up and down just by, just by by changing it. Right. So the DHEA so remind me the glia was the was. Omega. Nine oleic acid. Right.

You can think of the two of them if you glia is like taking a stack of plywood. Right. And you stack, you put ten layers of plywood and you get one big thick, tight package, right?

Omega nine plasma. And they stack up really nice. And you create this really tight format. Got it. Make it three. The day is like stacking up chain link fence okay.

It's kinky. It's loose. You can't. So you can put it doesn't form a real tight. And that's what allows it to open and close open and close. So so what happens when we get older when our membranes get rigid?

Okay. We talk about excess cholesterol in the membranes. Okay. That is because of the the lack of de plus margins in the membrane. Fundamentally it's okay. Let's, we're getting close to the end of our time here.

We haven't really scratched the surface on so much. But tell us just a little bit about, this must your community project that you're involved with. That sounds fascinating. We were looking at Moose Jaw on the map.

It's in the middle of Canada. For those listening, if you're not sure what, but what's happening, mister? What's so exciting is that, look, we have all these advanced doctors like yourself and others that are making dramatic improvements in people's lives.

Okay, there, we don't suffer from a lack of knowledge in actually improving people's lives and outcomes. We lack the ability to implement these in a reasonable scale so that more people can benefit from what we know.

And the problem is, is that that's usually sequestered by big pharma or, or big academic institutions. And they're not doing these integrated programs.

And so what the Future Vitality project is all about is about taking an entire city. And we're putting in a three TMC there. We've got our blood testing, and we're going to actually do a community trial of 30 to 50,000 individuals where we actually do this systematic restorative health programs where we can actually show people getting better, but we can actually do the epidemiology, the rates of heart disease, the time to long term care, dementia rates all go down.

And this is we can so this becomes standard of care. This is systematic. At this point in time. There's we don't really like guessing when it comes to restoring mitochondrial health restoring proximal health, restoring these things.

The problem isn't that we don't know how to do these things. The problem is that we don't do them, and we don't have a mechanism to do them in a reasonable way.

And humans are time consuming, right? Like it's easier to go in, get a diagnosis, get a prescription, go to the pharmacy. Okay. Then I'm done. I have a ten minute call and I'm, you know, when it comes to actual health, all of us that are involved in this more advanced care realize that doesn't work.

That's an investment of time, attention and resources. Absolutely. Yeah. And so people don't realize that because they take health for granted. It's a given until they don't have it and they look for the quick fix the pill, whatever.

But really, to manage your health, it's a question of how you are going to allocate time, attention and resources. And this is a big moment. If you're listening to this, it's not okay, there's a pill.

Let me take it so I can keep doing what I'm doing now. It's how do I recalibrate my life to actually ensure my health. Right. How do I invest in that again, with time, attention and resources it's going to take when you plan for that.

That way, then your life just takes a completely different trajectory, right? And that's that's the beauty of this whole thing. Yeah.

Community Health Project and Practical Longevity

And you have to make it easy for people, okay. And they actually need to feel the results of it. Right. Because it's a big black box. Okay. And we're pretty good at intimidating individuals.

We use a lot of jargon in science, and we do it a lot to shut people up, saying, you know what? We're smarter than you. Just do what you're told. You know, there's no way you can understand this.

And the reality is, is, you know, I don't need to know how a microchip works to learn how to drive a car. Okay? I don't need to know all the intricacies of how this thing was designed.

That's okay. I just need to know how to keep it running. And I need to enjoy the fact that my car runs good. Okay. Like, you know what I mean? Like, and if you can get people to the point where they if you've been successful in your life and if you've done, you know, you worked hard, you've done job, you've got married or you've had kids, you've done all these things, all the things that you've learned in your life that give you some sort of logical outcome is applicable to your human health.

And the problem is people think of human health like a black box. They get overwhelmed with it. They shut down and they just throw their hands up in the air.

Yeah. And I think what we need to do is we need to break through that. So, you know, it's actually not that complicated. That's right. And actually and once you get them on a path and they realize and they feel it, then they can continue it.

And that's where that investment of time comes in. And yeah. Well the program is about what I've been studying like this whole, you know, artificial intelligence.

There's some great tools out there. I've been doing artificial intelligence since the early 90s, okay. Because we used to call it as unsupervised statistical analysis.

And so our big data systems with mass spectrometry and others looks for patterns, associations and predict abilities. And that's where the problem concept comes in, in that we we know that we can predict disease long in advance because the human.

But you just don't walk down the street and lightning hits you and you get colon cancer. Okay. There is a prodrome there is a period where your health has deviated and that has a predictability that if if uncorrected, it will result in a certain outcome.

Okay. You know, we can't always predict exactly when, but we know and I use a ball tire brand new tire analogy for people. Like if you have a ball tire, you can predict that you're likely to get a flat, but maybe not.

Maybe if you're lucky and you're only driving on smooth streets all day long, and if you have a brand new tire, you're less likely to have a flat. But again, if you hit a big enough nail, even if you have everything right.

And so it's about probability. And we know that we can stack the odds in our favor dramatically and reduce virtually 90% of these diseases with logic and actually interventions that restore these things without having to worry about the disease at the end.

The human body is designed to work. We just need to let it do its job and provide it with the ingredients for it to do its job. Yeah, I agree with that.

That's, been a wonderful conversation. I really appreciate you taking the time to, to speak with us about this. And, you know, one of the most impressive things to me about the whole plasma story is that people that optimize their plasma.

Less cancer, less dementia, and you can even overcome genetic predispositions. We didn't go into all this, but genetic predisposition that you might have with that.

But we for and other things for dementia, you can overcome those and you can you can revert yourself back to the normal risk of the average person in the population.

So this is such a critical thing, for you to take seriously and think more about. So I can't thank you enough. You're welcome. I consider Plasma Origins the gateway supplement.

It's like, okay, you get a little activity. So now you say, you can actually feel better. Well, let's fix a few other things while we're at it. Right.

Kind of like a gateway to. It's a positive gateway drug. It's a gateway. Yeah. You know what I mean? So that's. It's a big hammer. People feel good pretty quick on them.

And then you say, okay, well, this is you know, we're not talking, you know, there's some real stuff here. So let's let's fix a few other things now. Well, I got your attention. Yeah. Beautiful.

All right. Thanks so much. Thanks to have this. Great. Yeah.