Heal Your Cells: The Hidden Root of Brain Aging Transcript

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Introduction: Cellular Dysfunction and the New Book

So many people feel exhausted, mentally foggy, metabolically unwell. The upstream root component is actually a cellular dysfunction. Cells have lost that ability to recognize what they are.

Immune system was attacking different parts of the body. And the cells are behaving completely dysregulated and hypervigilant. Most people don't even know this is really going on because they're not even looking at these biomarkers.

People are waking up, but they cannot depend on the system that is so archaic and having these conversations. You have to understand what the pieces to your puzzle is.

Why are doctors not looking there? Well, hello, everyone. I'm Dr. David Perlmutter. Welcome again to The Empowering Neurologist. Why do so many people feel exhausted, mentally foggy, metabolically unwell, or simply older than they should, even when their routine laboratory tests and their doctor evaluations are described as being normal or at least in the normal range, a term that kind of gives me the willies.

My guest today is Dr. Will Cole, and Dr Will cole believes that part of the answer to these questions may be found by looking beyond individual symptoms and focusing on what is happening actually within our cells.

Dr. Will Cole, a longtime friend, is a leading functional medicine expert who consults with people virtually around the world. And more than a decade ago, he established one of the very first functional telehealth centers, and he's been named one the nation's top functional and integrative practitioners.

He focuses on things like thyroid dysfunction, autoimmune conditions, hormonal imbalances, digestive disorders, metabolic health, and, of course, brain-related concerns, hence why he's on the podcast today.

He's also the host of the popular podcast, which is called The Art of Being Well, and he is the author of The New York Times bestselling book called Intuitive Fasting, Ketoterian and the Inflammation Spectrum and Gut Feelings.

His newest book that he authored with another friend, Dr. Josh Axe, is Heal Your Cells, Reversing the Irreversible. Its central message is both simple and absolutely compelling, and it is that long before disease has manifested and becomes obvious, dysfunction may already be developing at the cellular level.

And today what we're going to do is explore what healing your cells actually means. We're gonna talk about the mitochondria, a subject we bring up quite a bit on this podcast.

How are mitochondrial function? What they mean for metabolic health? How mitochondrion are involved in things like inflammation? We are going look at nutrition, environmental exposures, sleep, movement, circadian rhythm.

And of course, we'll focus on psychological stress because we can't avoid that topic.

Why Cells Lose Resilience

We'll also examine several emerging interventions from peptides, everybody's interested in peptide and red light therapy to stem cell infusions and plasma exchange, and consider what evidence truly supports these interventions.

Now, ultimately, this conversation is going to be about moving beyond the question, well, what symptom do I have? And then reframing the questions to what is interfering with my body's ability to produce energy and repair itself and ultimately remain resilient?

I'm delighted to welcome Dr. Will Cole here to The Empowering Neurologist and can't wait to get started. Well, Dr. Will Cole, great to see you and welcome to the Empowering Neurologist podcast.

Dr David Perlmutter, it's always a blessing to catch up with you in front of everybody. I need to be a better human and meet up you offline and just in real life next time.

And I think you're a pretty good human already to start. This is our second time together in like a month, virtually, for podcasting, so that's cool. Very cool, thanks for having me.

So very excited about your new book and we're very close to the launch and that's exciting as well. So people can go ahead and pre-order it now. They learned about it in the intro.

I'll tag it again in you really help rein us in a little bit because I think we live in world of symptoms and symptom management that that's really what's important in disease.

And I, I that you and Josh really take us away from that being what we should be focusing on and the idea that underlying disease are issues with how our cells are working, what you characterize as cellular dysfunction.

So, Let's start by just defining what that means and why that's important. Yeah. Thank you. So, a few thoughts come to mind. One of the reasons why I wanted to write this book about this topic was my dad.

I don't know if I told you this or not, but… I haven't really talked about it publicly that much. My dad died suddenly in a car accident a few years ago.

He was 63 years old. It was a picture of health on the outside, right? They did more than most Americans did for health. I was going to pick up my mom from the airport and we don't know the details, but he lost consciousness.

Somehow, it seems like some sort of cardiovascular event in the car drove off the road, crashed into a tree, and it was gone. Here one second, gone the next.

And we all know someone that maybe it's a slow loss, maybe a quick loss. It doesn't matter, right? It's still difficult. And it just drove me down the road of why we're facing this crisis.

And this is paralleled with my work with a lot of people with autoimmune inflammation issues, right? And we always knew this mechanism of molecular mimicry, but we mainly were always in functional medicine, even talking about systems, when the…

when the immune system lost recognition itself, was attacking different parts of the body with the thyroid, with Hashimoto's, or the myelin sheath, MS, the gut with ulcerative colitis or Crohn's.

There's differentiation terms that we like to call it, but became sort of a healthy obsession, if you will. What's the actual root mechanism? Yes, molecular mimicry is going on.

Yes. One in two people are facing in the United States with heart attacks and strokes, but we know all of these things. The upstream root component is actually a cellular dysfunction and the cells that make up that organ, whether it's The microglial cells would you chalk so brilliantly in brain defenders of shifting to M2, what's going on there to someone's heart cells and that aging more rapidly with heart attack and stroke.

It is actually no matter what organ you're talking about, the cellular dysfunction has a lot of commonalities and it has to do with the cell actually becoming dysfunction.

Or if you look at the work out of Sinclair's work at Harvard, of this information model of understanding aging and chronic disease. The cells have lost recognition of self.

Mitochondria, Energy, and Cellular Danger Response

There's cellular confusion going on because of the larger epigenetic genetic mismatch and the cells are behaving completely dysregulated and hypervigilant because they've lost that ability to recognize what they are.

So the brain cells having hard time to recognise, hey, I'm a brain cell, the heart cell is having time, and then because of that, there's that ancient primordial defense mechanism, the cell danger response, where this cell membrane becomes more permeable, more rigid, impacting receptor site hormonal signaling, and then those mitochondria become leaky, if you will.

Someone can have leky gut syndrome or lekey brain syndrome. While there's actually cellular leakiness going on here, as far as these reactive oxygen species coming out of the mitochondria.

And the Mitochondria cellular energy factors are leaky too. Anyways, this causes a cascade because if one cell is defensive, then as above so below as within so without, other cells around it become dysregulated too, and then you have organ dysfunction.

The studies that we talk about in the book is a Stanford study came out in 2023. They found in one in five people over the age of 50, it was like 22 million Americans have one organ aging more rapidly significantly so than other organs.

So the sort of uneven aging going on and what they found was if the cells of the heart were aging you are at over 200% increased risk of a heart attack, stroke, heart failure, something like that impacting the heart.

And if your brain cells are aging more rapidly, you're about an 80% increase risk. Of some neurodegenerative problem. So that's what why cellular health so important because no matter what you re going through, Yes, we can, and the researchers are looking at more targeted cellular targeted therapies, but what we're gonna do now, there's so much we could do to arrest that accelerated cellular aging.

And I love, this is what your and I's work kind of overlap because it is so true. It's what see how people all the time, they have to know what they're dealing with to do something about it.

First, I want to express my condolences for your loss. What you described, it literally takes your breath away. I can't imagine what you went through.

My situation was one in which my dad died very slowly of Alzheimer's and you basically got the phone call. So it brings for our discussion the question of how does a person, not necessarily your father, but an individual who does all the things each right sleeps well, has normal labs, suddenly experience an organ dysfunction that may have been going on obviously for a long time.

How does that happen when we do the very best we can to evaluate somebody that person's had the workup, the golden work up, and yet how does multiple organs choose to age more aggressively and You know, as you said, the epigenetic studies demonstrate that that is happening and predicts disease in organ systems.

So how does that happen? Yeah, I think it's this larger mismatch, right? I mean, you know this better than anybody, but our genetics haven't changed in thousands of years, our world has changed so dramatically in such a finite period of time when you're putting it in context with the totality of human history.

So it is not just one thing and it so bio-individual, that's why understanding that person, like if you are the person that is listening or watching this, you have to understand what the pieces to your puzzle is.

Some of the things that are explored in the scientific research that Dr. Axe and I go into detail and heal yourselves is that it's the foods we're eating or the food we are not eating.

And we get very granular with that, right? Based on your specific organ aging, you may want to look at different things. Look, the researchers at Stanford look as certain proteins and they're working on diagnostics to make that available to the public.

But we have access to that now. I've been helping people via telehealth for 16 years. We can look at DNA methylation, we can at inflammation markers, and we could look a lot of good surrogate labs, if you will, to kind of put together and aggregate how fast or how slowly are your cells aging.

And the Stanford researchers looked at 11 different organs. We could at similarly the different methylations and proteins within these different organ that could be impacting.

So we have to look of food. Of course, food's implicated there. The soil in which that food is grown, of course. But it's not just that. It's someone like my dad's a good example of this.

You could eat better than most Americans are, but then you look at things like microplastics and forever chemicals. And you could even be intentional with living more of a non-toxic life, But, it is in the water or it in air we breathe.

This isn't about being a fear monger. We all have these different genetic abilities to detox and meslate and clear this stuff out. And then you think of this sort of bioaccumulation over decades.

My dad, even though he was health conscious, never looked at environmental toxins acting. Then you look at the research, the impact of these forever chemicals and microplastics creating this inflammatory response in people's cardiovascular health.

The hindsight's 2020. I can't go back and change what happened to my dad. But I think of that because I see that high on a lot of telehealth patients where they are eating clean, but there's these environmental toxins that could have been brewing, slowly accumulating for years.

We have to look at stress and trauma. My dad had a of both of those things and the impact that has on the gut-brain axis and this sort of hypervigilance happening on necessarily the level.

And our relationship to light. There's a components that we need to look at.

How Mitochondrial Dysfunction Drives Metabolic Disease

Hey everyone, we're going to get right back to the podcast, but I have an important message for you. If you're caring for somebody with Alzheimer's, any other form of dementia, or even what we call mild cognitive impairment, Or if you're focused on preventing cognitive decline, I want to speak directly to you for just a moment about some serious research that's going on looking at what we call 40 Hertz light and sound simulation.

We've been actually talking about that on the program. Here's the challenge. Not all 40 hertz light devices are the same. Most use what's called stroboscopic light, and that is the type of light that flashes, then you can see the flashing.

And that can cause nausea, it can cost headaches. And if you can't tolerate that, you won't use it. So there is a company called Optosudix. They've solved this problem with a patented technology that still gives you the 40 Hertz light flashing, but through light that looks and feels quite normal.

It's the device I actually have on my desk when I'm working. And that's why this company sees a 94% adherence rate and significant improvements across various metrics, including mood, energy, focus, sleep, and memory.

And the light is called the EV light, EVY. You can use it as I do when you're working on your computer, when your reading, watching TV, eating breakfast, whatever.

It becomes really part of your day, not just another burden. Its kind of passive in the background. So I recommend giving it a try for 90 days. And if you and your family don't see value in it, then you can return the device for a full refund.

They cover the shipping both ways. This is a device that really is risk free in terms of getting involved with 40 Hertz

stimulation. Important information.

Let's get right back to our podcast. Look, I wish it was different. I We lived in a simpler time. We have a lot of blessings in our modern time, we're talking across the country right now, what a blessing.

But it's too much of a good thing sometimes and we have to think about things that our great great grandparents didn't really have discuss. Because we're exposed to these things earlier and earlier, this mismatch between genetics and epigenetics, our genome is living in a brave new world.

And we have to, again, not be stressing about healthy things isn't good for our health. That's not what I'm saying. But we to be informed and make appropriate decisions and do the best we can and give the rest to God.

We can't become, you know, completely frenetic about these things, but I think there's a lot we can do, practical things we could do. And that's the message that I want to give people.

Yeah, and I wanna say, as you've so described in your new book, you provide people those tools and that so important. I wanted to get back to something you mentioned earlier, because I'll think it'll be a great segue for our conversation to your book actually.

So, where do the mitochondria sit in terms of our understanding about what makes a good cell go bad, a tissue go, bad a body go? Then we'll talk about how do we assess that?

What are the influences on mitochondrial function? And then importantly, I think for our viewers, what do you do to enhance mitochondrion function, enhance the number of good mitochondry that we have?

Let's start off with what I think you made clear is the primacy of energetics, i.e. the privacy of mitochondrial function in our health. Anybody that's out there right now that is going through things like brain fog and fatigue, anybody going to anxiety and depression, digestive problems, metabolic problems trouble losing weight, really pretty much any inflammatory problem, at least a component of that, why you feel the way that you do, It'd be hard to find somebody not impacted by some mitochondrial dysfunction.

So this leaky mitochondria, if you will, they're meant to produce ATP, your cellular energy factories. But when cell defense, cell danger response comes up, the cell feels hyper defensive.

the mitochondria start releasing these reactive oxygen species. It is a defense, but the cell cannot differentiate between physiological and psychological threats.

So for some people it could be a student that doesn't love your body back, so the next person could it be environmental toxin, for the other person it can be unresolved stress, trauma, spiritual disconnection, whatever it is.

And the mitochondria start releasing these reactive oxygen species. And that mTOR pathway, the pathway that we need for cell growth, for building muscle, it has its place.

God made it. But that mammalian or mechanistic target of rapamycin is high for too long, too high, and for many people. We need to help to shake up the cells.

That's not the correct way of saying it, but the way I think. of reminding the cell what it's supposed to be like. So if the brain cell doesn't remember it to brain cells, what are these researchers are narrowing down these adversity mimetics?

What are the things to kind of a cellular training to become more resilient and to reset? So there's a lot of ways we can dig into that, but what we eat and then when we the concept of chronobiological disorders is that are, which you've talked about for years.

I mean, things like type two diabetes, metabolic issues, these things that inflammation drives, is it, we are not giving

the body a reprieve.

Brain Inflammation and Microglia

So these pathways that our fine imbalance are always high, like mTOR and AMPK, energy pathways keep constantly shuttling energy to mTOR and not enough to autophagy.

And then these guardian angels of the genome, the sirtuins, these silent inflammation regulators are just trying to keep up with all the things we're just regulating ourselves with, this mismatch.

So we really have to… It seems like you're making it pretty clear then that upstream of these processes is energetics. And that, again, I think puts a pin in the fact that these mitochondria and mitochondrial function are really playing a pivotal role here, dare I say, in the whole process of aging, vis-a-vis informational change, the translation of that information.

So how much of this, let's say biological aging then, if we accept that mitochondria playing this role, how many of these is modifiable or even how improvement could we short of cellular reprogramming or gene therapy.

Now, what kind of outcome could one expect if we target the mitochondria with the tools that you're about to give us? Well, it depends on the study that you cite, but I think it's anywhere between 60% to 90% of how long or how healthy we live is due to the choices we make that we at least have some agency on, some more than others, certainly.

But these things are largely modifiable. The question is, what are the areas that need to focus on? Everybody's case is going to be a little bit different, but there's a lot we wield.

There's lot of influence we've wielded, a of agency that we have on our cellular health. And it's exciting stuff, right? I mean, the old theory that if this is your lot in life and there is nothing you can do about it, hopefully more and more people, that's not radical, more more are awoken to that truth.

Let's tie mitochondrial dysfunction to some of our most pervasive metabolic conditions. Let's say insulin resistance may be full on type 2 diabetes. How does dysfunction or problems with how the mitochondria work ultimately make its way to something seemingly so disparate as type two diabetes?

What's that relationship all about? mainly with type 2 diabetes when you're looking at the liver. The liver cells are what is dysfunctional there and even that's a good point where it's this concept of insulin resistance we know of course is peripheral insulin resistant but mainly these are dysfunctions of the livers and you can quantify this on basic biomarkers like liver enzymes, AST, ALT, GGT.

You'll see those spikes suboptimally They may not be outside of the pathological range, even though lots of people are. But in functional medicine, we're looking at optimal, not average.

What's that tighter range within that larger reference range? You're going to see the body have these sort of adaptation compensatory mechanisms well before.

And we measure these more broadly on liver enzymes and triglycerides, right, circulating fats. almost primarily, it at least begins with some sort of mitochondrial dysfunction that then is breeding, if you will, or spreading larger systemic dysfunction, not just about with one liver cell that has mitochondria dysfunction but it's affecting the other cells as well.

So the body has no, I mean, the glucose signaling, glucose or insulin signaling is impaired because of the cell membrane dysfunction. What's on that cell membranes is phospholipid-protected membrane on the liver cells and every other cell of your body are these hormonal receptor sites.

But at the byproduct of energy, the bi-product ATP from the mitochondria, you need hot proper cell membrane

integrity. The fluidity of the cell, membrane matters to let good things come in like glucose for energy like nutrients, like all these other amazing things.

And the buy products of ATP, from mitochondrion need to be secreted out. But when you have membrane rigidity, because the cells stressed out, and then the, mitochondrial becoming more leaky, if you will, the cell is defensive.

So the good stuff can't get in the sell because of the membrane is dysfunctional and then the bad stuff from mitochondrial being leaky can get out of this cell.

And that is sort of on a cellular level in part what's happening in this circumstance in liver with insulin resistance, which depending on the study that you cite is upwards of 93% of United States is somewhere on this insulin resistant spectrum.

They may not be severe, but they're not optimal, suboptimal to some degree. And most people, as you know, don't even know this is really going on because they are not even looking at these biomarkers.

For close to 40 years, I have found myself in examining rooms watching a family struggle through the loss of a loved one, not because that loved on aged, but because the loved had lost his or her cognitive function.

And, you know, basically I think we were all told that there was nothing that could be done. And in fact, I even parroted that narrative for quite some time.

But ultimately, i found myself in a place of not being able to accept that. I'm Dr. David Perlmutter. i'm a neurologist and Brain Defenders is my new book.

Clearly the book that I have spent my entire career building. It's officially launched and it's available for order right now.

Personalized Nutrition and Bio-Individuality

and I truly believe that this is the most important work that i've ever done Inside what you will find are the hidden threats that are working against your brain right now and also the exact science-backed actions that you can take to protect your memory, to your cognitive function, your clarity, you're independence, and your ability to interact with other people starting today, not someday, but actually starting For those of you who want to be all in, I'm excited to announce that we now have the Brain Defenders Immersion Course, which is a guided path to put the very work that was described in the book Brain defenders into action.

Step by step so that protecting your brain isn't something that you just read about. It's something you actually participate in. Something that actually you do.

Your brain's future is actually being decided right now by the choices that you are making today. So order Brain Defenders and join the Immersion Course today and you can get all this information by visiting my website which is drperlmutter.com.

To learn more about both the immersion course and the book. I wrote this book for you and for everyone you love. Let's defend your brain together and defend the brains of everyone.

You love as well remember the time to defend. Your brain is right now. You actually take it quite a bit further in terms of the subject that I'm very interested in, the microglia.

So how are mitochondria, these energy producers, affecting the brain in how they're influencing the brains immune cells? The immune system, the old science was that the brain was immune privileged, right?

I mean, that's what the model was, if there was inflammation that impacted the body, no one argued that. It was connected to all these different health issues.

They didn't understand how important it was. That we understand so much more inflammation's role in so many different issues and not just inflammation, but what causes the inflammation.

But the brain was somehow protected, the blood-brain barrier. Now we know that the Brain is not only not immune privileged, but has its own sophisticated system.

The microglial cells, which when you and I talked a few weeks ago for your book on my podcast, is the analogy that was used in the amazing book of the angel and the assassin, right?

How do we get these assassins that are stuck in this M1 activity These immune cells that are meant to prune and clean and be part of your defense system of our brains can shift from angels to assassins or from M2 to M1.

And that's where most people find themselves in, but they're so disconnected from it because we somehow will separate mental health from physical health in our world today.

And this doesn't apply to just Alzheimer's and Parkinson's in neurodegenerative problems, but as you and I would attest that there's inflammatory components to most many mental health or brain health nervous system issues, anxiety, depression, brain fog, fatigue.

There, you can quantify this. Oftentimes you will see either, at the very least, homocysteine being elevated, which we know can act as a neurotoxin. This inflammatory protein is associated in the scientific literature with increased blood brain barrier permeability and even suboptimal levels, not even extremely high levels of homocytes can be a component to this neuroinflammation or the microglial cells being activated.

And you can actually quantify these things, not just with homocysteine, but other markers to look at the integrity of the blood-brain barrier and the activity of these microglial cells, the brain's immune system, which again, you talk so eloquently in your latest book, it's just a must read.

And I think a companion to this conversation around, oh yeah. I agree, I agreed. Along with that is Brain Energy by Christopher Palmer, where it absolutely just totally solidifies what you just talked about.

or many of us get the idea that energetics are involved in Alzheimer's and Parkinson's, but the ideas that it extends to psychiatry, that's it's involved with mood disorders, it is an immune dysregulation as a consequence of the eneretics being compromised, you know, takes a little bit of a stretch in our understanding.

Diet is clearly very important as an inroad. And I think you make it very clear in the book that one size is not for all. One size doesn't fit all, and so the question, we have a lot of diets that people are recommending.

We know the Mediterranean diet's got a great pedigree. There's great value, as you and I have been discussing for a long time, to being more ketogenic in our food selections.

But you talk in the book about a more individualized approach. How do you go about assessing an individual to figure out what is the right recommendation?

What might she or he most thrive on as a religious diet? Well, you know, even under a label or a way of eating, there's so much nuance and context and customization to any way eating.

So this is where I have fun, a lot of fun and a lotta experience with on a clinical level for our telehealth patients to curate from a clinic nutrition standpoint what foods to focus on.

Whereas you may be under the umbrella of a ketogenic diet or Mediterranean diet, or and you know, a primal way of eating or whatever you wanna say it.

And the food you may wanna focus on from an additional therapeutic nutritional basis is gonna be different. So if your heart cells are aging more rapidly or of heart health, let's just say this way, your health is a goal for you.

You may want to focus different foods on a consistent basis over time versus somebody where maybe their gut health as more of an issue. Food medicine standpoint, that is a component to bio-individuality and what foods love your body back the best.

And then the second is the foods that don't love you your your back, but aren't necessarily quote unquote unhealthy. They're under the umbrella of whole foods, nutrient dense foods but may not agree with your right now.

I see this all the time, right? And this goes back to this larger mismatch, this sort of general advice of just focused on real foods.

Hormesis, Plant Compounds, and Cellular Renewal

for a lot of people, not everybody, but increasingly that's very broad and can create a lots of confusion because when they eat this food, it maybe doesn't love their body back so much.

And a lotta that has to do with gut health and what's happening to the human microbiome. and the whole foods that are maybe just hard to digest because we have really done a number on the human gastrointestinal system in the gut microbiome.

So when you look at things like oxalate sensitivity or histamine intolerance or FODMAP intolerant, a lot of this stuff from plant foods, largely in some things, like dairy as well, It's not the food's fault per se, but the poor gut just doesn't have the resilience to break these things down.

So we talk in the book at length about this bio-individuality and meeting your gut, meeting yourself, where it's at, and then building resilience over time so you can have diverse diet that's filled with nutrient-dense foods.

Are there any plants or herbs that have been demonstrated in humans to actually improve cellular health, as opposed to just improving biomarkers? Yeah.

The area that comes to mind are these is xenohermesis, the concept of xenohermesis. So we talked about ketogenic diet, we talk of intermittent fasting, anything that is this adversity mimetic that I was kind of referencing in passing earlier, how can we kind of have some cellular training to make ourselves more resilient or up-regulate these longevity pathways like autophagy, the cellular recycling, or mitophage, mitochondrial renewal.

Well, we need that mTOR to come down. We want autofagie to to up. we want AMPK to sort of CFO of our cell to shift things towards cellular renewal and you need adversity mimetic.

Can you explain what that means? Yeah. So things that mimic Good stress. It's the concept of hormesis. And the dose, people have heard that the dos makes the poison, but the does also makes to medicine.

So ketogenic diet, it's activating hormosis in the body. This adversity, mimetic, simulating stress, and the dose makes it, meaning you're not always necessarily in ketosis.

Many people do fine with the cyclical ketogenic diet. So the context and bio-individuality around these topics are important. Everybody's different. How can you use this tool at this point in your life?

So things like the ketogenetic diet, things, like intermittent fasting, cold plunging, high intensity interval training, re-hit, sauna. We know we don't always want to be doing those things.

That's not how it works. But pulsed usage of this helps to really make ourselves more resilient. So to get to your question, the specific plant medicines or plant compounds, same concept applies to plants.

or Xenohormesis, it's the plant went through some stressful time in their life, its life. And the cells of that plant, I'm oversimplifying it, but the cell of the plants kind of tell ourselves, hey, remember who you are, become more resilient.

It stresses ourselves out a little bit and makes ourselves more resilience. So think. brightly colored rich pigment fruits like blackberries or bitter olive oil and organic is actually better for many purposes yes doesn't have herbicides and pesticides but also they had bugs eating it so it made the plant more resilient and makes these polyphenols and flavonoids that are mimetic to ourselves to become more resilient.

So I think bitter is better. Things like bitter olive oil, rich pigmented fruits and vegetables. Eating the rainbow comes to mind. And within reason, I'll obviously be mindful of the amount of sugar, but fiber rich foods are a good thing to consider here.

Bitter olive Um, specific compounds are things like, uh, Fisetin has some good research. So it's in strawberries naturally, but you can get these therapeutic doses of these senoletics, these things that break down these zombie cells that are dysfunctional.

cells that refuse to die and your body can break down these pro-inflammatory senescent zombie cells. So things like phycitin, which you can supplement or get from strawberries, quercetin is another flavonoid that you get form foods and supplementation.

These are plant compounds that stimulate your cell to be more resilient. I know I've heard it also called methyl adaptogens. They sort of regulate methylation to make your cells cleaned up to kind of use Sinclair's concept of buffing out the CD or record player so your cell can read what it is.

So the brain cell knows it's a brain cells by reprogramming it using food. You know, in the assessment of individuals, this thought comes to mind, and that is you really dedicated, I think, a bit of conversation to the idea that we should be looking at the intracellular levels of various metrics as opposed to simply what we're finding on a standard blood test.

So why is that just something that seems, we really care about what's going on inside the cell, but yet that's not typically what you will get when you get a blood test.

Why is intercellular so important and why are doctors not looking there? And how does it differ? I get that three questions, take them in the order that you like.

Why Standard Labs Miss Intracellular Problems

I think it's because, you know, there's such a, chasm between where the research is at right now, a lot of exciting stuff that we get to talk about on our podcast and in books and with patients, and then the conversations that people are having with their primary care physician and things that are available in the market.

There's a huge gap and it may never get there, the conversation that the people were having. So it's really that larger paradigm shift, right? I mean, it diagnose a disease, match it with a pharmaceutical drug.

And if you fit into that box, those are conversations that people are going to have. That's the labs that are being done. It's within that model. There's no pharmaceutical drugs for vitamins and minerals, right?

So it's really not a conversation. that's been had now being had more and more. But normally, it's the doctor that is well intentioned. Of course, they got into this because they want to help somebody, but they're not trained in this.

So they just say, well, read this book, like read Dr. Pramata's book. Like, I don't know what's about it. but just like look into This people are waking up, But they cannot depend on the system that Is so archaic.

and having these conversations. Yes, they'll give you the pharmaceutical drug and yes, people knew that sometime, but ultimately we know we don't have this epidemic rise of chronic health problems or chronic cellular dysfunction in our country today because of a pharmaceutical deficiency.

So yeah, you're gonna have to go somewhere else. It's like asking the gardener for mechanic advice or whatever,

right? It just a completely different paradigm.

Let me shift our conversation to a very hot topic. I mean, when you go to these conferences, whether they're professional or somewhat less professional, the talk on the street is all about peptides, BPC157, cerebral lysin.

There are a bunch of them out there. beyond the GLP-1 drugs, which are peptides as well. And so where do we stand right now on good data related to the use of any of these peptide that are very widely used, you know, amongst the influencer influenced community?

Yeah, I think that it's when the FDA took them off of the good list and put them on the naughty list in 2023, it just kind of blew it up. You look at the amount of people that use peptides then to now, but the problem is they just shoved it underground and people went to sort of shady gray area markets that were research only.

Some are fine, some are great, construct, but many weren't great. Many weren' great and have a lot of impure toxicants that you don't even know. There's zero transparency to a lotta these companies and you dont know what you're buying.

I don' wanna be fear-mongering about it, But it can be dangerous. Some people that really were harmed by these impures, not clean peptides that just had good marketing around it.

Um, so I think that the move towards, and this is happening in real time, but the moved toward moving at least some of these peptides to a place where compounding pharmacies and pharmacists and doctors and patients can make that decision for themselves to get real world data.

to get more studies around it. But the evidence that is there is promising and anecdotally, you're gonna see people say all the time how much it's helped them by bringing some oxygen in life to the peptide world by allowing people to just make this decision for themselves.

We can have transparency. People don't have to go through gray area markets and we can get some real world data and hopefully some actual randomized control trials too.

Will you talk about ozone therapy as well? And do you see that as promising? Yeah, I would put that in the same bucket, right? It's like we need like, let's actually get some good data around this instead of pushing it to the back alleys of the internet.

So people can, you know, they're going to do it anyway. Let's just allow people to get the best version of it so we can actually give informed information.

Hey, we're gonna get right back to podcast, but I do have an important message, For decades, we've been told that our genes are basically our destiny as it relates to health and that everything's locked in place, predicting even our future brain health.

But let's be clear, your DNA isn't a verdict, it's a roadmap. And I'm talking to you today about 3X4 genetics. I actually described them in the new book, Brain Defenders.

This is a committee that helps you understand your genetics, what you've inherited, and I think more importantly, how your daily choices can influence how those genes are actually expressed.

In other words, how you can control your own genetic expression. And that matters for your health and it really matters to brain health, including things like memory and mood and cognitive resilience.

You may carry genetic markers associated with cognitive decline like as we've talked about APOE4, but possession doesn't equal expression.

Peptides, Ozone, and Plasma Exchange

Your lifestyle, your nutrition, and metabolic health, all the things that we talk about here on the podcast can powerfully influence which genes are turned on and which stay quiet.

The 3×4 Genetics Test looks at how your genes impact brain function at a cellular level, which then, through the 3X4 Health Journey, in which they provide you, guides you through a clear and a science-backed program focused on inflammation, methylation, oxidation, oxidative stress, things that we routinely discuss here on the podcast that are the key drivers of basically what makes a good brain go bad.

And we have spoken with the team at 3×4 Genetics, and they were able to get a special offer for our podcast community, so head on over to 3X4Genetics.com and get that special offer and start really your personalized brain health journey today.

Let's get your genes working for you and let's go back to the podcast. hormetic in nature too, where it is this pulsed stress that's happening on a cellular level that makes ourselves more resilient.

So I have actually seen people that have chronic Lyme disease, people who have mold toxicity, different autoimmune issues in their gut, that they've gone the traditional route with certain antibiotics, antifungals, whatever you're talking about.

And they may have seen some progress, maybe not, but they're looking for another tool to shift their immune system in a positive way. And it really, with the right dosing and clinical oversight, seen great success with something like ozone.

I would put it under the category of adversity memetic. It is good stress that makes your cells more resilient. But the dose makes the medicine, right?

I mean, more isn't better. This is not something, of course, you want to breathe in. And this is something that can be very irritating to the body. But it is a tool to consider and it's something we talk about in Heal Your Cells because of its promising research that is out there.

Very popular these days, at least the discussion about plasma exchange. Can you walk us through what that's all about and what data is there to support recommending it?

Another tool that I would love just more research out there, but the data that we do have, it's really promising of being able to clear these environmental toxins that are kind of impervious to normally supporting detoxification pathways.

So I wouldn't say somebody's eating inflammatory foods that don't love them back, or, you know, they haven't done anything in wellness. I Wouldn't Say, well, let's jump to therapeutic plasma exchange.

But for somebody that is Like I'm monitoring this stuff on lab. So when I look at microplastics or herbicides and pesticides or something showing up and we'd get them to a certain point and they're a lot better than they used to be, but they kind of, okay, this last 10% are not where they need to and not everybody needs this.

But these bioaccumulation environmental toxins, both man-made and things like mold, for whatever reason, genetically or epigenetically, we're not able to get the numbers as good as we'd like to.

And therapeutic plasma exchange is taking a dose of a certain amount of someone's plasma and replacing it with a biologically mimetic form of albumin, which is mimicking their own plasma, that sort of cleans their plasma.

So people can see afterwards all this sort accumulated dirty plasma, if you will, afterwards and being replaced with clean plasma afterwards. It's done over a series of sessions, but it's a great way to clean the blood from these environmental toxins where maybe everything else hasn't worked for you.

I notice that it is certainly becoming much more popular these days. Where would it be most applicable? Who's the

best candidate, do you think, for this plasma exchange procedure?

I would base it on labs. So this is why it's more of, I'd say at this point, a niche thing that people you'd wanna see data, right? You'd want to see, hey, I have done a lot to support my detoxification pathways on whether it be manmade environmental toxins or bio like mold, bacteria, viruses, something like that.

And the immune system staying on for whatever reason. You have data on the environmental toxin and you have your data some sort of inflammatory process objectively or a symptom that you're having, brain fog, fatigue, some inflammatory problem.

and we're looking to push that beyond where you're at, move beyond that plateau. I would say that is the candidate for that, because then you could see pre and post where these numbers are at.

And you can obviously, we would want them to feel the difference as well as a tool. So I've seen it be a great tool for people, but it's not one of those things where your doing it by itself.

It's part of sort of a larger goal of improving your health. Dr. Cole, you talk in the book about this cellular longevity report card. So how do you do that?

And what kind of information, what do extrapolate from that once people have been able to complete that. What is it and what does it tell you? It is obviously, you know, there's no replacement for a good solid health history that I could do via telehealth or lab data.

Like with the Stanford researchers looking at those proteins, or we look at DNA methylation and different inflammation immune markers, it's going to look these different organs.

But we adapted hallmarks, clinical pearls, if you will, signs and symptoms, things to look out for in your life. And looked at these different organs that were looked out in the Stanford study.

There's around 11 different organ or so and things that we see people experiencing with. Maybe aha moments and surprising for people because it's their everyday so they've normalized it.

And they, oh yeah, I have that every day. I didn't know that meant this.

Cellular Longevity Report Card and Daily Actions

And we walk them through the different systems or organs of the body and what those cells of that specific organ may be telling them and they don't even know it.

So it's not the same as a lab, but it is a pointer. It's a ballpark pointer into looking at maybe these are the areas you should be focusing on. So at that point, we give bio-individual protocol prescriptions, if you will, recommendations for those specific organs.

And that's the way that we were able to bring some bio individuality, sort of this customized approach that was used in a clinical setting, but in book form.

So if any of our listeners right now want to do good by themselves tomorrow without a very intensive evaluation and intervention, what's the one thing you could recommend to our listener right know that they could start tomorrow that would have a huge impact on their cellular vitality?

I would say a few things that I think cause the cellular confusion that impacts the mitochondria, that impact the cell membrane, and that causes this cellular cascade of dysfunction.

So to sort of do some summary setting of your cells to allow them to be renewed, I'd say one is looking at the foods that you eat, focusing on nutrient density, from a proteins, fat and carbs standpoint, but then focus on his

xenoharmetic foods.

So things like bitter, good extra virgin olive oil would be one. I think that you and I had this conversation on my podcast, getting these bitter berries, like foraging, bitter the better.

Again, being mindful, you don't need a lot of these things or just the brightly colored plant foods can be very helpful or things like herbs, adaptogenic herbs like rhodiola, ashwagandha, turmeric, herbs and spices that have no sugar in them.

Herbs and Spices can also be great because if you're thinking about sort of the bitterness of it, those are the xenohermetic things, these subtly they're recycling enhancers.

So I would say looking at the foods and then looking your eating window, so even a good 12-12, you don't even need to be aggressive, but just allow a couple of hours after in the evening before you go to bed so your body can fast through the night and then progress from there.

But times of fasting can be a great adversity mnemonic to stimulate these cellular renewal pathways like autophagy and mitochondrial renewal, mitophage.

Look at your relationship to light, which is part of improving your sleep hygiene, allowing a couple of hours wearing blue light blocking glasses, getting away from your screen.

having a nice cool blacked out bedroom where you can get proper REM sleep and deep sleep so your body can recover through the night, which is where a lot of these cellular renewal pathways are happening while you're sleeping.

And then looking at stress and trauma would be the last thing I would say is that I have telehealth patients do some journaling every day 20 minutes a day and writing things you maybe would never say to anybody, but sort of metabolizing stored stress and trauma.

You can use it as a time to connect to God or prayer or gratitude. I mean, the research on self-compassion and gratitude is so clear on its ability to lower that cellular danger response, to decrease these inflammatory proteins.

So those are some practical things people can do right now and then be consistent with those things. You list them. I mean, you make it very clear what people should and can and should do.

So I wish you the best of luck. This is going to be a great book for you guys. Thanks, man, I appreciate it. Dr. Promatter for having me on the podcast.

I'm really excited about this book. And thank you, Dr Cole for joining us and we'll talk soon. Doctor Cole, thank for you joining me today and helping us better understand what it means to approach health at a cellular level.

One of the most, important takeaways from our conversation today is that our cells are not simply passive victims of aging. They are continually responding to the information that they receive from the signals we give ourselves, like the food we eat, the activity that we pursue or neglect, sleep that prioritize or we don't, stresses that experience day in and day out, and of course the environmentals in which we choose to live.

We can't control every aspect of aging or risk of disease, but we can influence many of these signals. And by improving metabolic health and supporting something we've talked about quite extensively, the function of our mitochondria Reducing inflammation and honoring the fundamental needs of the human body, we create a more favorable environment for energy production, for things like repair and resilience, and of course, long-term brain health.

This is an enormously empowering message and Dr. Will Cole's new book, co-authored as mentioned earlier with Dr Josh Axe, is Heal Your Cells, Reversing the Irreversible.

And you can also hear more from Dr Will Coale on his podcast, The Art of Being Well. So my thanks go out to Dr. Cole again for being part of this Empowered Neurologist podcast today and also to all you guys for listening.

Thank you for joining us. I'm Dr David Perlmutter and I look forward to being back with you all very soon. Bye for now.