Introduction and Guest Welcome

This is doctor talks. Real talk from real doctors. Only issues that matter to you most. Welcome to another session of the Reverse Inflammaging Summit, Body and Mind Longevity Medicine.

And I'm your host, Doctor Robert Lufkin. I'm joined today by my co-host, Doctor Steve. Sideroff. Hey, Steve, how are you? I'm doing great. Rob, it's a pleasure to be here with you.

And I'm very much looking forward to a speaker today. Doctor Mark Hyman is, practicing physician and an internationally recognized leader, speaker, educator, and advocate in the field of functional medicine.

He's the founder and director of the Ultra Wellness Center, senior advisor for the Cleveland Clinic and for functional medicine, and a 14 time bestselling author on the New York Times bestselling list.

So wonderful to have him here. I'm looking forward to our meeting. Welcome, Mark, and it's a pleasure to have you here. And thank you for having me. Thank you.

Thank you. And my co-host, Rob. Doctor Rob Lufkin. Great. Yeah. I'm excited. Before we really dive into the subject really deeply, can you tell us a little bit about how you got interested in the area of aging and longevity?

Well, I'm getting older, but. Out of self-interest and actually jokingly but in part, that's true. And it's just the natural consequence of digging into the root causes of why we get sick and how we age.

And functional medicine has been the work of my life. And through that lens, I've been able to understand where we're headed in medicine, what's emerging and what's important, and how we begin to rethink what we're doing from the perspective of creating health as a way of treating disease, rather than suppressing disease or aging.

With some intervention that blocks interrupt something in the body. How do we activate the body's own innate healing system?

Rethinking Aging and Biological Age

I love, I love asking our speakers, and this is a question we ask just about everybody. Before we get into the details of it, let's step back and maybe just tell us, Mark, how you how you conceive of longevity and aging, why we age.

What's the framework you use for that? You know, I think I think, you know, we're we've come a long way in our understanding of the biology of aging. It was thought of as this normal, inevitable consequence that we grow old, decrepit, frail and get chronic diseases as we get older.

But the truth is that our biology has the capacity to regenerate, rejuvenate, repair, and reverse our biological age at any time, whether we're 30, 40, 50, 60, 70, 80, 90, 100 or more.

We have that innate capacity. So unlocking that has really fascinated me, and I've seen just remarkable things in my practice. Reversing what seem to be end stage diseases, heart failure, kidney failure, late stage diabetes, and seeing what, you know, would be thought to be miracles.

But they're not. They're just inevitable consequences of understanding the nature of biology and the laws of biology, and how we can activate the body's own healing system through understanding what causes imbalance in the body and how to restore balance, which is really the fundamental framework of functional medicine. Take on the bad stuff, put in the good stuff and let the body do the rest.

Yeah, but it's it's really great. And, motivating to know that, you have found ways of reversing some of these processes of overcoming what a lot of people think is are inevitable.

I'm wondering in terms of body and mind and, and what you're saying, what role do you think stress plays in this process? I don't know. I mean, stress is, you know, is a ubiquitous phenomena.

And it's not necessarily bad. It's it's, in fact, some stresses actually help you live longer. In our thermo regulated, environmentally controlled, perfect worlds, we're we've sort of absolved ourselves from having to do physical work from extremes of temperature and, and shifts in our ability to find food.

We basically create an environment that's bad for us. And so I don't think that very stress is bad. I think it's the, mental stress that is the result of our thoughts and our beliefs and our ideas and often create the most harm.

Stress is not necessarily what happens to us. It's what we make of what happens to us. It's not the reality of what happens to us. It's the perception of the reality of what happens to us.

And the biology of this is very, really clear. I think, I think, I don't know if we some herbal medicine or somebody, in medicine to define stress as the real or imagined threat to your body or your ego.

So it could be a real threat to your body, such as somebody having a gun to your head. Or it could be, that you think your wife is cheating on you, but she's really not.

And you still have that same physiological response. So learning how to master our minds is a key part of of maintaining our health of our lives. And actually mindset and meaning and purpose are really, happiness and optimism are really key parts of longevity, right?

Yeah. I love what you said about the the event almost itself being neutral and then the, the meaning we assign to it can either create stress or not stress, depending on how we interpret it in some cases.

So that's interesting concept. Yeah. Backing up a little bit, you mentioned biological aging. Can you define that and versus maybe chronological aging.

And then also what what are your go to tools to measure biological aging? It's an area that's evolving very fast. Now. Yeah. Well, chronologically, we're getting older.

We can't do anything about that. I was born in 1959, and every day I get chronologically older. The question is, how was my biological age progressing or not?

Stress, Mindset, and Hormetic Benefits

And I recently adjusted my biological age. I'm 63, and I'm biologically 43. So I think that really interesting phenomena that we can actually get chronologically older as we get biologically younger.

I tested my, biological age to a technique called DNA methylation, which is really relatively new type of test and measures our epigenome, which was the really the piano player that plays that keyboard, which is our genes and that determines our health or determines our level of disease or rate of aging and so we have enormous influence over epigenome.

We can't change our genes that are fixed unless we do gene editing or Crispr, but we can change the expression of our genes by what we eat, by what we think, by how we move, by our environment, by toxins, or removing them by a level of nutrient density or die by how we manage stress.

All these things are read in their book of life and are literally read into our genes. And so we have enormous power at any age to transform that. And a lot of the research around longevity now is focused on the epigenetics of aging and how we can modify that to our environmental lifestyle.

And that's really where the hope is that a lot of the things that we we see as normal aging or really abnormal aging. Yeah. I wonder, do you see, you mentioned the DNA methylation, sort of the epigenetic, clock, really popular sort of in longevity.

Do you see those, assuming a clinical role? Too early currently. So, I mean, I use them, I use them in my practice. Absolutely. I think, you know, there are many ways to measure our biological age that are not, a true biological age, but are some indirect indicators which we do all the time.

We measure cholesterol. Your blood sugar, your blood pressure, we measure your hormone levels, and, we measure your nutrient levels. And there's all kinds of ways we can look at your biological functioning and see where you on the spectrum of wellness to disease.

Right. So that's what functional medicine is really good at. But what's really exciting is these new technologies that that have been able to measure things like DNA methylation or telomere length or telomerase activity, which are more reflective of the rate of biological aging and are a metric which can be used to assess how you age and how what you're doing affects how you age.

And so let's say you start on a lifestyle or a diet program or, supplement or medication. How do you measure your rated by life aging? Well, now, there are tools and techniques to actually do this clinically, which can help you identify whether you're on the right track or not.

So this is what I do with myself and with my my practice for sure. Yeah. Very exciting time. Yeah. So I'm wondering if you're with this, the baseline reading you took where you found out you were 20 years biologically and I was that was my first.

That was my first try. It first try. I'm going to try to get to 25. I'll see how it goes. But I'll keep you posted. Well, I, I know in your work food is very important.

In fact, you said food is the most powerful drug on the planet. As a psychologist and knowing about addiction and drugs, that that resonated with me because I know you, we can use drugs in a good way.

Can you use drugs in a in a bad way? So, how is your what is your perspective on that? Well, I think, you know, we underestimate the power of the molecules and information and food to regulate our biology every day.

We don't almost think twice about what we're eating except for the taste. Good. Or how does it make us feel in the moment? You know, understand that we're not eating just for energy or pleasure.

We're eating to regulate every single function of our body. That's the most important thing we do every day to interact with our world. And. And it's transmuted into biological signals that control every aspect of your health your microbiome, your immune system, your energy system.

You know how you make energy in your cells, your detoxification system, your circulation. Let us know how your hormones and communication systems and our transmitters, your structural system, what you're made of, all these things are influenced by food and and they regulate so many different functions of your body.

So when we see, chronic illness and I just tell you a quick story about, you know, the power of food, the MREs in my book Young Forever, I share the story of a patient who came to the Cleveland Clinic at 66 years old, with a body mass index of 43.

I mean, it's really, really obese. She, you know, basically normal is 25 or less, 30 is obese, 40 is severely obese. She had type two diabetes for ten years on insulin.

She had heart failure. She had kidneys were failing or liver was failing. Blood pressure was high. She had multiple stents put in her heart, and it was on a pile of medications, and was not doing well, even though she was having already is managed by the best doctors in the world that were doing the right thing according to our current

paradigm.

And rather than kind of tweak her medications or adjust her dosages, why don't we try a different approach? And she joined a group. We have a clinic called Functioning Provider, who was able to actually transform her health very quickly, using food.

She radically changed her diet from eating ultra processed food, diet as high starting sugar to whole foods, low glycemic, anti-inflammatory, low sugar starch, higher, higher fat.

Diet. And within three days, she was off her insulin. In three months, she reversed her heart failure, her diabetes for A1. See? But, you know, you're the doctor.

You know it was 11 and went to five and a half, which is, you know, unheard of. If you have a medication that drops it by one point, it's like a blockbuster drug.

Food as Medicine and Reversing Chronic Disease

And we're talking here about six and they're appointment. It's algorithmic. It's not linear point. And she reversed her heart failure again so that we never see intuition as in reverse or kidney failure again.

Everyone that we see and traditional medicine or liver, fatty liver resolve or blood pressure, normal IQ only medications. Her co-pay was $20,000 a year.

She got everything. Most 43 pounds in three months and ended up losing 160 pounds a year and completely reversed everything at 63 years old or 66 years old, that that's the power of food.

There's no drug that works as well as that which is. There is. And if there was, I would prescribe it. I have no, kind of, righteousness about medication or pharmaceuticals.

I use them all the time. The question is, you know, what's the right drug for the right for this problem? And 90% of the time, it's food. Yeah. That's such a powerful story, Mark, I, I wonder and I've heard that in other settings as well, how these chronic diseases, which we're treating the symptoms, with drugs and surgery, the root cause can be reversed with lifestyle changes and particularly food is is arguably the most powerful one.

I always wonder and I'm I'm still involved at, medical school now teaching people. And I see what's going on. I see what's being taught. Why aren't people shouting this from the from the rafters that, you know, we've got a cure or not even we've got a cure.

No one, no one gets rid selling broccoli. Ha ha ha ha ha. I mean, I think Pfizer just announced that it, increased the price of Covid vaccines 10,000%.

Now, this is. Doesn't make any sense. Right. And I think we're we're in a, in a profit driven health care system that often ignores the simplest, most effective and inexpensive treatments, in favor of things that actually don't work that well and that cost a lot and have downstream negative consequences.

So I think, you know, we have a we have an antiquated health care system where in the medical education system, my daughter is in medical school right now, and it's it's it's yeah.

I mean, what she's not learning, I mean, you know, it's like, you know, by the time I textbooks written, it's outdated. But truth is that most work that's just outdated, it's like we're learning about the world is flat and our world is round world.

And I think that's really, you know, it's really criminal. Given the level of understanding we have now about biology, the entrenchment of our healthcare system and the old medical paradigm is, is really frightening.

It sort of reminds me of Semmelweis, who discovered that washing hands could prevent childbirth, fever and deafness patients in labor and delivery. You know, he was ridiculed for thinking that and was banished from medicine and then dying, you know, in disgrace.

And, took 15 years for doctors to go. Oh, yeah, I guess we should wash our hands before doing surgery. So, you know that that's kind of where we're at now.

Well, I mean, yeah, I, I certainly understand the pernicious incentives and the financial motivations from the drug companies and all the factors that are lining up.

But, I mean, what about the young medical students that are idealistic? Yeah. They're just not being taught. I mean, are they maybe not exposed to this? Yeah.

I mean, they're trying to themselves like, my daughter's like, hey, dad, there's a food medicine study group at my medical school the students put together. I'm like, yeah, okay, great.

And that should be part of your curriculum. It shouldn't be something I have to do on the side, you know? Right? Right. Yeah. I mean, I love your I love your quote, that every bite of food you take is like instructions that control the operating system of your biology.

I, I think is sort of like, like somebody else said, it is, the way we program our epigenome is with each, each piece of food we take is programing our epigenetics, for better or worse, you know, depending on.

Absolutely. Depending on the food we take. Yeah. Absolutely. Absolutely. Yeah. So you talk about or misuse, can you explain what it is and how it can be activated?

Yeah. So, you know, one of the exciting things about, or anything in biology that we have an innate immune and healing system, we have an innate system that is designed to rejuvenate, repair, and fix our biology.

And it's activated by stress. And historically, we lived in a, in a world where we were constantly exposed to, different kinds of stresses heat, stress, cold stress, hunger, stress, exercise, stress, and, and it turns out, that these kinds of stresses actually help us.

If you are in extreme stress for too long, it would kill you, right? If your body is immersed in, 40 degree Fahrenheit water for too long, you will get hypothermia and die.

But if you do it for 3 or 4 minutes, it activates your body into a response that creates healing and builds your innate immune system. Activate your brown fat, it increases dopamine, increases focus energy, through metabolism in many ways.

So there's there's so many benefits to, to these different kinds of little stresses that we have insulate ourselves from. So for me, this is the idea that we should we should practice little stresses every day to activate our body's own healing system.

So what are those kinds of stresses? Well, first one is diet and what you're eating and how you're eating. And when you're eating and what you're eating.

The easiest form of for me is just taking a break from eating for a little bit. And I'm not talking about fasting for a week. I'm talking about 12 hours, which most of us don't do.

We eat, we go to bed and we eat when we go. So, taking a 12, 14 hour or even 16 hour fast every day, overnight fast. Which means eight of those hours you're sleeping is not so hard.

So if you dinner at six at night, you can eat in the morning. That's a 14 hour fast, right? That that creates a little bit of stress and starvation in the body that then activates, body's own repair systems called autophagy, which means

self eating or cannibalism that helps your body recycle and repair all parts and cleans up old waste.

And that's really important for longevity and for healing the body. And then what we eat is really important. There's a whole world of science around phyto hormones, which are the plant compounds, the phytochemicals in plants, and actually bind to different receptors and pathways that act, that create a little bit of a stress, like a little bit of a toxin that activates these ancient and built in systems that enhance longevity and reverse biological aging.

And then there's other stresses that we can easily do, like take a cold shower for two minutes in the morning, get a cold plant which may be a little more expensive, or you just can write like a, I'm gong gong, a trough that you buy for next to nothing at the animal feed store filled with water and ice cubes.

And, you know, it's a natural three minute, sauna. Again, another powerful way to increase our our stress to our body through heat stress that creates heat.

Chuck proteins that help repair damaged proteins, that helps activate our innate immune system and help our bodies, reduce inflammation and improve our our heart rate variability, reduce stress in our systems, and have a really powerful effect in sauna users.

For example, in Finland live, you know, you know, a 40% reduction in death rates because of using sauna, for example. Or we can do, you know, other forms of Prometheus like exercise.

That's a great form harmonizes where we stress our bodies. When you weightlifting, you tear muscles. And that's a form of injury or stress to the system.

Why Nutrition Matters in Medicine

But then you build that stronger. Same thing with with interval training where you do high intensity interval training where you run really fast for like a minute and then you're like a different from a tiger, but then you rest for three minutes, slowly walking that you do that for half an hour and repeat.

And that activates something called, improvement in your VO2 max, which is really critical for longevity and is again, another beneficial stress. And then there's, you know, other kinds of just like hypoxia, you can get a breathing match for 50 bucks online that you can use while you're sitting on your desk.

That limits your flow of oxygen. And things after a period of time to create hypoxia, which causes in, you know, inducible hypoxia factors, which are, again, reparative, we can also use other forms like hyperbaric oxygen, which have been shown to kill zombie cells, which are part of the aging process that spew out inflammatory inflammation and that increase your telomere length.

By using hyperbaric oxygen, which is a, basically a pressure chamber where you are under the water, two atmospheres equivalent of two atmospheres of pressure, and 100% oxygen, which is a stress to the body.

And that that heat creates a healing response. Ozone is another therapy. So there's many of these kinds of therapy that are available to us. Some are easy to get to and some are a little bit more challenging or expensive.

But but they're but they're around. And those are the kinds of things that really activate your body's cooling system. So I make sure I, I activate some type of promises every day.

It's what is it about the the stress or the exercise or the event, that that takes it from beneficial to harmful. Like a little bit of stress is beneficial, but chronic stress is harmful.

A little bit of exercise. I mean, are moderate exercise good but too much is harmful. What what what's the difference? I mean, well, to paraphrase the Paracelsus, the dose makes the poison, right?

So I think, you know, you've got to find that Goldilocks version of the stress. If you again stay in the solid too long,

you'll get heatstroke. You've seen a cold place too long, you'll die of hypothermia.

You have oxygen, hypoxia too long. You'll you'll, you know, run out of oxygen. If you were in a hyperbaric chamber too long, it'll you'll get oxygen toxicity from being too high oxygen state.

So I mean, it's just really about finding that perfect dose of you, you know, don't eat for 16 hours or 24, 36 hours. You're fine if you don't need to for a month, you're dead.

So it's really about finding that Goldilocks version. It's it's, what we call the inverted U-shaped curve, which is a very common relationship, where you need a certain amount of whatever the stimulus is to activate.

But then if you go too far past it, then you bring that curve back down. So stress and performance, the challenges that you're, you're talking about, you want to challenge the body is what I'm hearing, but you want to do it within a certain framework where you're not over loading the body.

Exactly. Yeah. Part of the one of the emphasis of this program is on inflammation, aging and inflammation. Could you talk about, how inflammation drives aging or how how the hallmarks of aging are affected by inflammation?

Yeah. Well, I mean, first of all, you know, inflammation is and we're all familiar with it, it's this process where there's pain and inflammation through which leads to swelling and heat.

And, you know, it's really classic signs of, of, of, of inflammation. But what, what's, what's really going on is more sterile, chronic inflammation in the body.

Hormesis, Fasting, and Beneficial Stressors

That's influencing all the diseases that we see today in the world, from depression to cancer to obesity and diabetes, the heart disease, autoimmune diseases, obviously, and more.

And the and these are all, driven by the underlying factors that are driving inflammation are diet, poor premature diet, the same processed foods, our sedentary lifestyle, our chronic stress levels, environmental toxins changes where microbiome all these things are driving inflammation.

And and so that has a massive effect throughout the body. And as we're beginning to understand the process of aging, scientists talked about the hallmarks of aging.

And there's nine. I say there's ten for the microbiome. But essentially these are all things that go wrong as a result of various insults in the body or insults to the body or lack of certain things.

We need to thrive like good food and sleep and the right nutrients, etc.. And so inflammation is kind of a common unifying theory around a lot of this.

And all the hallmarks of aging are both caused by and can cause inflammation. So they're really inseparable. And the hallmarks of aging are I think you might or may not be familiar there.

Things like damage to our DNA are problems there. Epigenome, mitochondrial injury, proteins that are messed up and not folded properly or injured. From other nutrients and systems.

This is one of the central features and also draws a lot of information, which is how we regulate our our, our responses to proteins and sugars and things in our diet that regulate the aging process.

So too much sugar and starch, which is the predominant source of our calories in our diet today, drives these inflammation pathways. And that makes this process of inflammation amazing worse.

And so, you know, we have, all these ways and even the microbiome, you know, there's a huge source of

inflammation because of our toxic diet. And that affects our microbiome, and that creates changes in the rest of our biology that drives inflammation.

So inflammation into Maging is is this common unifying theory. But it's both the cause and the and the effect. It's both causes, a lot of the other hallmarks of aging, but it's caused by a lot of the hallmarks of aging.

So it's really one I mean, it's not really good to call them all separate. They're really one interlocking set of problems that if you deal with the root causes upstream to the hallmarks of aging, you deal with all of them.

So a lot of the science now around longevity is focused on treating the hallmarks of aging, which I think is a big improvement. And seeing aging as an disease, which I think is a big improvement.

But it doesn't really address the the underlying phenomena that the hallmarks of aging have a cause. Right? What is the cause of the cause of aging? And that's where functional medicine comes in.

And the framework of understanding, what? You're basically dying too much with too much or too little of your diet, too much that food, too much stress, too much toxins, too much, you know, allergens, microbes, etc.

and you're dying of too little on the right things, too little of, the right nutrients and the right high quality phytochemical rich diet and, right amount of sleep and movement and and etc..

So it really functional medicine helps us get to the root causes of the causes. And that's what's so important. And that's why it's such a radically different approach to, aging.

You know, you mentioned how how important and powerful nutrition can be in decreasing inflammation, and certainly the role of avoiding, sugars and refined carbohydrates, starches, all those things to to decrease inflammation is do you think, following a diet that lowers.

So is there any additional value for being in ketosis where you've actually switched your metabolic switch to fat burning? Yeah. So there's a lot of ways to activate hormones.

Right. Which is this idea that that, you know, it sort of mimics starvation. But we know from, from the research that the only thing that really extend the life, in animal models is calorie restriction, because if you eat 30 less calories, you live a third longer.

That's like 120 years old. But no one's gonna want to do that because you're going to be hungry and irritable and have no sex drive and be frail and like, it's not a good thing.

So the question is, you know, how do we how do we activate or mimic calorie restriction? And that's where we talk about time restricted eating or intermittent fasting or fasting.

Mimicking diets and ketogenic diets are another form because historically when we ran out of food, we, you know, we have about 2500 calories, which is basically a day's worth of calories in our muscle stored.

It's like the carbohydrate. We probably have 50 or maybe depending on you are 100,000 or more calories fat in our body. And that can when our body can start to break down that fat, it can use that as fuel.

The body's like a hybrid car or run on gas or electric gas or like dirty burning fuel, carbohydrates and, fat is clean burning fuel, like electric. And so when you need a ketogenic diet, which historically we didn't need a condition to eat, right, we were going to doses when we were kind of hunting gather, we can find something to eat.

We shift into this state, or methis, which activates our body in the same ways as these other forms of starvation. So we end up, activating our anti-inflammatory systems, DNA repair systems.

We silence mTOR, we increase autophagy, we fix our mitochondria, increase mitochondrial biogenesis. We do all

these things that basically create health as a consequence to make us stay alive.

So we kick in all of the repair and healing mechanisms when we do that. Now the question is, do we think it tells us all the time, is it good to be on all the time?

And I think from an evolutionary point of view, we never were. We would eat and then we would starve, and then we eat and we start. So I think, it probably is cyclical.

Ketosis is not a bad idea or any of these other techniques. And we're still kind of, you know, thread the needle on what that is. And there are drugs which are anything that like rapamycin, they're being studied for longevity.

But I think we're we're still in the early stages of kind of figure all that out. Yeah, I want to I want to talk more about rapamycin and M Tor in a bit.

But before we to before we leave the nutrition, part, I think, yeah, the the consensus is pretty strong about sugars and and refined carbohydrates, you know, avoiding those to drive inflammation there there are a couple other things I wanted to get your take on is some people also, in addition to avoiding refined sugars and refined carbohydrates and sugars, they also avoid, what are called seed oils or, industrial oils, canola oil, you know, rapeseed, all those things as as drivers of inflammation.

How do you feel about that?

Inflammation and the Hallmarks of Aging

Is that important to do or. Yeah, I mean, I think I think, you know, the problem is, you know, we always consume these oils, but in their original state, right?

We eat the beans or the seeds or the nuts or sources. These oils that were were found in Whole Foods. What we've done, you know, in the last 100 plus years and we, we invented this refining process, very repressed, extracted through heat and solvents, these oils from, various common plants that are really kind of unknown to our biology in the sense reusable soybean oil has increased, thousandfold, in its consumption in the last hundred years.

So that when you see something like that, I'm like, you know, does that really good for us? And I think, you know, in general, it's not going to be bad.

And many of the, observational studies show that it's good for you, I think. I mean, there's a real challenge with nutrition science. It's hard to do good experiments with people.

It's hard to get experiments because you can't. We're not locked 10,000 people up for 30 years in a room, and another 30, another 10,000 people, another room, and put them to different diets and see what happens.

Which would be the best thing to do. This is never going to happen. So we gotta have to extrapolate. And that's why there's so much nutritional confusion in the literature.

Personally, I think that, you know, the main oils we should be consuming are olive oil, extra virgin olive oil, avocado oil, which is, an oil. It's more monounsaturated. It's a higher temperature.

Eat some coconut oil, depending on your health and lipids and your genetics. You know, you know how I eat more saturated fat. And I don't think it's the boogeyman that it was thought to be Joe Cocker.

Or it can be helpful. Animal fats typically are fine for most people. I think, you know, the whole idea of cholesterol and animal fat that's been really well debunked.

In the literature in terms of cardiovascular effects. In fact, there there are there are, trials from, Sarah Halberg and

others where they put type two diabetics on ketogenic diet, basically, basically butter and, you know, and coconut oil and other fats and high, super high fat, 70% fat diets and everything.

One of the cardiovascular biomarkers, but better or more neutral. So I think I think there's really good evidence that in interventional trials that there's really little harm, especially in metabolically and healthy people.

So, my my personal opinion is I don't consume those oils, I avoid them. They're ubiquitous in processed foods. We don't actually even think we're consuming them.

I mean, I use them in our kitchen. The people do vegetable oil, corn oil, soybean oil, canola oil. I, I typically stay away from them, and I think I consume them in their whole food forms.

I think we do need them. And the people I've seen have extremely high imbalances in omega three to omega six. When you have too much omega six, it can it create, problems with the, function of the omega three fats?

So you kind of, in a way invalidate the omega three fats. So it's not that they have omega six as we need them. They're essential fatty acids, but it's just around really the right ratio amounts.

And one last food question. One other area people talk about is grains. And, you know, even people who don't have full blown gluten intolerance or celiac disease, do you recommend avoiding grains themselves, whole grains or any kind of grains as, drivers of inflammation?

Well, I mean, there's two questions there because, you know, you have celiac disease. You should definitely avoid gluten, that there's no question about that from anybody in medicine.

Grains as a whole are not all grains. You getting back right. You know, buckwheat I mean, amaranth, quinoa. These are all ancient grains. That can be helpful.

However, when you are metabolically very unhealthy, which is around 93% of Americans, the more even of these healthful grains that you consume, they can be problematic.

So, you know, one of the things that's emerging, I really think that's fabulous is the ability to monitor our own biomarkers in real time. So now we have continuous glucose monitoring.

You can measure your blood sugar. And so you can stick a little finger on your arm, the patch and have this continuous read of your blood sugar. And you can see if I eat a cup of rice, what does that do?

If I eat a cup of quinoa, what does that do? So some people can tolerate it, but other people it is a problem. And for people who are in the extreme and by like type two diabetes, I don't think they should have any grains or beans until they're able to reverse their type two diabetes, and then they can broaden their diet.

So I'm not extremist, but I do think in certain situations you need a more aggressive approach. And that may include limiting grain. The news. Yeah. Thank you. Thank you.

We're we're talking about what can impact our biology.

Ketosis, Seed Oils, and Grains

We're talking about premises and different challenges. But you've also talked about the power of community and love to actually change our biology. Can you expand on that.

Sure. You know, there's a whole new field emerging that, it's called social genomics, which is the understanding of how our social connections and interactions influence our gene expression.

And we know from the from these data points that if you're in, if you're lonely or isolate or disconnected, don't have

physical touch. Our community that you age faster, that you die sooner.

And that is an extreme high risk factor for all kinds of diseases and death. And then if you have community and you have connection, you have meaning and purpose that you live longer.

And so it really we understand not only just this in from a population study perspective, but actually from the mechanistic perspective. And, you know, I travel to Sardinia and Ikaria, Korea, part of the blue zones.

My friend Dan Buettner introduced me to people there. And I got to really see inside these people's lives and, you know, this deep sense of meaning and purpose and connection and community, they they're not stressed all the time and busy all the time.

And they just want to sit and chat and hang out and enjoy each other, enjoy life. And it's like we we kind of missed that. This culture, we're always like driving, going, doing, being productive and rather just being and enjoying life.

So I feel like, you know, we're in a very interesting moment where we need to kind of rethink our, our values as a society and start to bring back some of those values of community and love and connection.

Yeah, yeah. So it it sort of resonates with my model of resilience, where relationship is a very important component as well as having purpose in your life.

So it fits with what you're saying for sure. Yeah. That's so important. Well, maybe I can I can go from love and community. Go back to another question.

What are the most promising longevity compounds? And from a functional medicine doctor. Yeah, yeah. What do you want? I mean, I mean, honestly food, but, I think I think within food, there's a whole, a framework of understanding these phytochemicals.

And this whole emerging field of phyto or uses, which is the idea that within the plant world and even within animals who eat those plants, when you eat those animals or their milk or feed, actually contain these very powerful compounds from nature that we've co-evolved with the regulator biology, and can have really remarkable effects, for example, by feeding in strawberries, which is, a compound that seems to activate many of the positive nutrients and pathways that we want to activate properly when we want to think about longevity, for example, like, like, analytic, processes which kill, we kill the zombie cells, or we increase, autophagy or we decrease inflammation through inhibiting ineffective B, or we increase mitochondrial biogenesis and function, meaning we are immune system function.

These these compounds really do that. And they're things come from green tea from the red grapes industries still being which is another compound, curcumin.

You know, one of my favorite compounds is something called, quercetin and some of the planetoids that are found in Himalayan territory. Buckwheat as the plant which you can eat, the pancakes or not, or the supplement.

But in that there's something called to. Oh, by which is an amino rejuvenating compound to turn nowhere else in nature. I think both help make this, deputy plan my mentors founded the company, and so they're, they're all kind of these magical compounds in food, that we can use from green to catechins to human.

And, and they have real promise. And I tend to consume these foods as much as I can, and I tend to take supplements with them in them. But then there's a whole class of pharmaceuticals that are being explored, and you know, two of the most promising ones have to do with, regulating two of the, nutrient sensing pathways that are part of one of the hallmarks of aging, mTOR and, Ampk.

And so one of them is called rapamycin. It's a compound that was discovered in Rapanui in the 60s up on Easter Island, where they have weird statues. And I think aliens brought down or something of how they got there.

But, they, they, they found that on the back of the statues of this compound that was about maybe it was fungal or, had other property that was a good way to kind of maybe was helpful in transplant medicine for immune modulation.

Community, Love, and Social Genomics

But then we discovered it regulates this ancient survival pathway called mTOR, which is needed to build muscle up a protein synthesis. But also it needs, to be silent at moments to increase autophagy, which is the recycling repair system we talked about.

And so this drug, rapamycin, which is named after Campanile, that binds to this receptor called the mTOR, which was named after the drug called mammalian target of a mice.

And it actually, seems to extend life in animals and reverse a lot of the biological signs of aging and the hallmarks of aging. So should we all be taking rapamycin?

Probably not. I think there's still a lot of research needs to be done. There's a lot of questions about the dosage and safety frequency, the timing. There's there's a lot of companies.

I just talked to the CEO of one of them today who, they are creating rapamycin analogs that may be better with side effects. So, that's a really exciting compound, I think.

Another one is metformin. I, I'm a little dubious about it. It works on a pathway called Ampk, which regulates some resistance and use for diabetes. But but you know, all the studies I've seen, you know, on metformin is that, you know, it's actually, you know, works, but it doesn't work as well as lifestyle.

So it's like people like, oh, I'm going to take this drug and I pay my diet. Well, no, I mean, in the large diabetes prevention trial, over 1000 people, they found that, people who lived a healthy lifestyle and it was actually a really crappy diet for diabetes.

It was a low fat diet, but they had other supports and exercise and group meetings and, you know, healthier food. But it was low fat, which is not the right diet and diabetics.

It still was far better than hormone and nothing. So, you know, there was a 58% reduction in progression diabetes with people doing that versus a 31% reduction in the performance.

So, you know, even impute, for example, would do a study on, like Sarah Hubbard's work. And, you know, you look at maybe a 60% reversal of diabetes, not just prevention, you know, 100% reduction in some of the main medications and percent weight loss measures, staggering numbers.

If you were to use that kind of diet with these people, you'd see probably, you know, metformin would look like it barely had a blip on the graph in terms of obesity.

So I kind of I'm a little dubious that there's a big trial going on now, the pain trial, which is, coming out, it doesn't it's, you know, it's not about side effects.

It does have some adverse effects on mitochondria. So I kind of don't like the idea that I put myself. I'm more optimistic about it. But again, I think there needs to be more research.

And maybe the use of some derivative compounds that don't have the side effects.

Longevity Compounds and Rapamycin

But I mean, the longevity research is just, is just accelerating at a rapid pace. Yeah, yeah. You mentioned m tau and how do you reconcile the need as we grow older to silence mature with also the need to maintain grow muscle,

you know, so this is the thing, you know, you've got this pathway that's essential for building must always is the currency of aging and sarcopenia, which means loss of muscle is really what people die from, from frailty and weakness.

And, the metabolic consequences of replacing muscle with fat, even if you're normal weight as you get older. So keeping your muscle mass is critical as you get older, you know?

But it's also important to increase autophagy, which is the the ability of the body to recycle and repair and clean up old parts. So we both need the demo team and the construction team.

Right. And it's got to be a balance. So a lot of people say, oh, you should be villain because you want to sound smarter and you want to pass all the time, like, well, no, I mean, you you need the times where you're actually building muscle, you need times where you're not.

And so within the course of a day, not that hard to do. You just, you know, do a 12, 14, 16 hour fast right, overnight fast. And then you work out and then you have, a load of good quality protein that activates more per muscle synthesis.

And it's the surest way to maintain and keep your muscle. And then having adequate amounts of protein throughout the day at each meal with the right amounts of leucine.

Now, leucine is an amino acid. The more an animal protein lower in plant proteins. And you know, you have to eat a ton of plant protein, the equivalent in terms of its leucine and branched amino acids, which are critical for protein synthesis.

So people who just don't understand this, they well, you can get all your protein from animal plants. Well, yes. But you know, you have to have six cups of brown rice to get the equivalent of a four ounce of chicken.

Nobody needs except for brown rice, so. Or two cups of beans. So I think these have to be realistic about the dose, and the quality of the protein. And you need to modify your, your diet as you get older, even even studies that may, may suggest that having a lower protein when you're younger is better.

They all show that when you get older, it's not. It's really important to have high quality protein and a protein study, which is a big survey of all the science on protein and aging and muscle mass and sarcopenia by leading aging researchers, leading protein experts in the world, all came the same conclusion we need not just 0.8g per kilo, but we probably need 1.2 to 2 gram per kilo, depending on our activity level, to build and maintain muscle as we get older.

And and yet, you know, we have to again also get breaks and activate autophagy. And there may be compounds like, rapamycin that we can begin to take that actually even accelerate the autophagy and kind of thread the needle a little bit.

So it's kind of an exciting time, but I think people need to understand that it's, you know, you can't go extreme one way or the other. Are you using rapamycin with your patients or in your group?

Currently not not yet. No. I think it's still too experimental. I mean, there are Biohackers who are using it. There are leading aging researchers who are taking it.

You know, I think, it's definitely very fascinating, but I think it also has side effects. So I think, you know, like the drug, it's not like it's like I say, eat lots of strawberries from, you know, wild strawberries, which are high concentrations of eaten.

You're not going to get in trouble doing that right. Yeah. You know. Yeah. Well, we're almost out of time. Is there anything we haven't talked about that you're particularly excited about that we need to need to cover here?

Yeah I mean, I think I think the message I would love people to take home is that is that, you know, we're at this really exciting transitional point, medicine where for the first time, we understand the laws of biology and how to activate our body's own healing system.

And it's not by treating diseases, by creating health and functional medicine is the framework for doing that. In my book Young Forever The Secret of Living Your Healthiest Long as Life is really packed with the science of how this works, and what's at the root cause of aging and the root cause of the hallmarks of aging, and gives you a very practical sense of tools and a pathway and a roadmap, to follow, that actually will help activate all these healing systems and reverse the biological age.

Yeah, yeah, yeah. I, you know, we usually end by asking you wanted to what things that people can do to improve their longevity. But I'm so pleased that you've been giving us a whole menu of things throughout.

Yeah, yeah. I thought, you know, that's that's really great. I really appreciate that. But how can people reach you if they wanted to learn more about your work?

Muscle, Protein, and Healthy Aging

Well, they can find me, on my podcast, the Doctor Pharmacy with their, my website is doctor Mark Hyman. I'm sorry, doctor hyman.com. And on social media, it's this doctor, Mark Hyman, Dr.

Mark Hyman and now more more than enough of me know very well. Thanks. Thanks so much, Mark, for taking an hour to spend with us in our audience here.

And thanks also for the great work you're doing in this field. It's it's really been a pleasure. Thank you so much. Thank you. Thank you for tuning in to Doctor Talks.

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