

# **THE** MODEL **HEALTH** **SHOW**

**EPISODE 484**

## **7 Mind-Blowing Ways To Extend Your Lifespan**

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**SHAWN STEVENSON:** Welcome to The Model Health Show. This is fitness and nutrition's expert Shawn Stevenson, and I'm so grateful for you tuning in today, on this episode we're diving into some of the latest, greatest, cutting-edge research on longevity. We're specifically covering seven surprising things that are scientifically proven to extend your lifespan. Now, this is going outside of the normal paradigm of diet and exercise, and looking at, what things do we know contribute to longevity that a lot of folks don't realize?

The very first thing that we're going to start with, the first of these seven surprising things that contribute to our longevity. The first one is sex. Sex appears to be protective of the number one killer in our society. Heart disease ends approximately 630,000 lives every year. This past year, nearly 700,000 people died from heart disease. Now, part of longevity is not dying, and so addressing this number one killer in our culture is of the utmost importance, and sex appears to have a hand in this.

A 16-year study published in The American Journal of Cardiology, conducted with over 1000 male participants aged 40 to 70, found that men who had sex at least twice a week were almost 50% less likely to die from heart disease than men who had sex once a month, or less. Now, there's many factors that go into this when looking at the connection between sex and cardiovascular health, but it's so interesting that connection, love, even sex is related to the heart. And to stress this out even further, and looking not just at cardiovascular health, but overall immune system function, and immune system performance, there's an interesting connection between sex and immune health as well. A Study presented at the Eastern Psychological Association Convention in 1999 found that study participants who had sex once or twice a week had higher levels of the antibody Immunoglobulin A, or IgA, compared with participants who got busy less often.

Now, IgA is found in saliva and the mucosal lines, and it's one of the very first defenses that our bodies have when protecting ourselves from infections. So, one of the very first front-line immunological weapons that we have is IgA, and this is enhanced through sex. And according to the researchers at Wilkes University in Pennsylvania, sex once or twice a week in the winter can boost the immune system and reduce the chances of catching colds and viral infections. So, snuggling up in the winter can actually enhance the immune system. So again, we're looking at the defensive capacity that sex seems to have in protecting us against cardiovascular disease, and also infectious diseases as well, and now, it's also well established that healthy sexual activity can keep our brains younger, because we're not just interested in increasing our lifespan, we also want to increase our health span and our cognitive ability, or

our cognitive performance throughout our lives, so that we can enjoy all of the years of our lives and have more life within those years.

A Study conducted by a team of researchers at the University of Maryland found that regular sexual activity not only triggers neurogenesis, which is the creation of new neurons in the brain, the creation of new brain cells, but sex also improves cognitive function, potentially helping people to think more clearly. Right? Now, I don't know if this has happened to you before. Have you ever thought more clearly after sex happens? Maybe it was... You realized it was a mistake. You know... Depending on the construct of the sex, right. Or maybe you realize like, "Wow, life isn't so bad," or whatever the case might be, maybe you gained a level of clarity after the session is over. Now, this is what the researchers found.

Now, another study, and this one was published in 2010 in the Journal of the Public Library of Science, found that sexual activity causes cell growth directly in the hippocampus, so this is well established to be the memory center of the brain. So, this is the part of our brain that's associated with long-term memory, and sex has been found to actually create more neurogenesis, more cell growth and development in the hippocampus. Really, really powerful.

Now, this leads to a significant assessment, which is, understanding the most important sexual organ that we have is actually not what's downstairs, but what's between our ears. Alright, our brain is our most powerful and important sexual organ. Because your brain largely controls your sexual health, but as the data shows, your sexual health also influences your brain. Now, taking advantage of the things that you're going to be learning about today, in particular, in the context of sex and improving longevity through sex, this requires some intentionality. This can't be something like, "Hey honey, I want to increase my longevity, you know what to do." You know... Like... That's not the approach for this. So, a healthy sexual relationship tends to have tenets of communication, trust and safety. And the ingredients for more love and connection are going to be varied from relationship to relationship.

And this is in the context for this particular episode today, because we're dedicated to longevity, but we have several masterclass episodes looking at improving the context and content of our relationships. And so, we'll have several of those for you in the show notes, we've got episodes with John Gray who wrote the book, Men Are from Mars, Women Are from Venus. We've got episodes with relationship experts like Christine Hassler, the list goes on and on. So definitely check out the show notes if you want more on that domain. But I want to look at another way that sex has an impact on our life-span, which is the impact that sex has on happiness. And the majority of clinical evidence shows that happy people do live longer. There is some data showing that pessimistic people can outlive people who are not as pessimistic, but the majority of data shows... In a massive way, that happy people do indeed live longer.

In an Arizona State University study on about 60 middle-aged women, physical affection or sexual behavior with a partner significantly predicted lower negative mood and stress and higher positive mood the following day. Simply put, the researchers found that sex and physical intimacy led women to feel less stressed and be in a better mood the following day. And we know that stress is a major killer, stress is a major health issue in our culture today. Upwards of 80% of physician visits today are for stress-related illnesses, when there was a time when this was more for injuries and infectious diseases, like, that was the thing that was just the norm. We've largely dealt with a lot of these issues and now, we're moving towards these chronic issues that, again, even though infectious diseases might kind of come and go, these chronic health issues, these chronic lifestyle-driven diseases just continue to go up each and every decade in our culture, and they're not really stopping.

And so, addressing this at its core is going to be important, so anything that can help to reduce stress, a connection, affection, and sex are some of those components. A part of that being... Even if we look through... Because in that study, we're talking about intimacy and connection even, not necessarily just the dynamic of sex, helping with positive mood, but specifically looking at sex, if we look in the construct of orgasm, you're releasing a cocktail of chemicals that have some really remarkable anti-anxiety effects, anti-depressive effects, and we're talking about a cocktail of oxytocin, prolactin, of the increasing serotonin, all of these things happen in that context of an orgasm. And I was kind of hesitant to say cocktail when I was saying this chemical cocktail, that's what caught me up.

So, in addition to that, a 2004 study of 16,000 Americans published in the National Bureau of Economic Research, found that people who are happy tend to be the ones getting the most action. The study estimated that boosting between the sheets time from once a month to once a week was the happiness equivalent of getting a \$50,000 raise. The researchers did note that the type of sex mattered with sex in a loving relationship showing the most benefit. So again, it's like, having that dynamic psychologically given the same happiness equivalent is getting more money, alright?

So, a lot of really interesting data on this context in the relationship between healthy sexual activity, healthy sexual relationship and longevity, and we're going to actually build on this piece, because sex is one component of something I'm going to come back to and talk about more in a moment, but I just wanted to start with this, because this isn't usually a part of the conversation when we're talking about longevity. When we're talking about not just increased lifespan, but increased health span. And sex appears to have some really interesting protective effects against our biggest killer. And also, adding to the equation of healthy biochemistry of healthy immune system function and so much more. So that's number one on our list of these seven surprising things that are clinically proven to extend our lifespan and our health span.

The next one we're going to talk about is one of the most powerful aspects of nutrition that is largely negated, it's so largely look past, and this specifically influences one of the biggest aspects of longevity, which is cognitive health and the health of our brains. Most people are finally aware that the human brain is upwards of 80% water, so somewhere in the ballpark of 75% to 80% water, it's the most water dominant organ in our bodies next to our lungs. So, hydration of our brain is critically important, right? Now, what most people are not aware of is that water alone cannot maintain the functionality and connectivity of the brain cells without this key category of nutrients, water can't even properly hydrate, travel throughout or store itself adequately in the brain or other tissues for that matter.

And this category that I'm referring to is electrolytes. Electrolytes are minerals that carry an electrical charge, and it's really amazing for us to understand that our body is really running on this electrical energy in many ways, and we use devices that can measure this electrical output of the body. If we look at being able to monitor the activity of the heart, you know, we see on the movies, beep-beep, we're measuring the electrical output of the human heart. But all of our cells are doing this, interacting with and expressing this electrical energy. And without electrolytes, literally, it's required for signal transduction, for our brain cells to communicate with each other. When we become deficient in electrolytes, all of these processes for our brain and body start to plummet.

Researchers at McGill University found that sodium, one of our key electrolytes, literally functions as a "on-off" switch in the brain for specific neurotransmitters that support optimal function and literally protect the brain against neurodegenerative diseases. So, it functions as an on-off-switch. So, when we're low in sodium, it can switch off these protective neurotransmitters and the activity of these neurotransmitters, if we don't have optimal amounts of sodium, it is that important. But yet, most often when we think of sodium, we probably think about it in a negative light, in a negative context, we'll talk more about that, but I want you to understand how important these electrolytes are, and sodium is just one of them. So, it literally helps to function and defend the brain against things like epilepsy and neuropathic pain.

Now, we cannot have a conversation about electrolytes and the impact on the brain without talking about magnesium. A fascinating new study published in the Journal Neuron, found that magnesium is able to restore critical brain plasticity and improve cognitive function, to restore it. So, this is the thing that's lost, it gets degraded over our lifespan. Magnesium is key here in restoring brain plasticity and more. So, let's look at this in the context of another one of our big killers, because, again, a part of longevity is not in dying. A double-blind placebo-controlled study, and this was published in the Journal of Alzheimer's Disease, found that simply improving magnesium levels in adult test subjects, and these were folks between the ages of 50 and 70, could potentially reverse brain aging by over nine years. Again, if we're talking about

lifespan and health span, literally being able to make our brains younger, something so simple, it's a simple nutrient, but it's also one of our biggest nutrient deficiencies in our culture.

Right now, 56%, at least, at minimum, probably closer to 70% of US citizens, are chronically deficient in magnesium. And this is literally required for our brain to run processes. So, we're literally walking around in our society with a brain that is underperforming, that's not functioning at its optimal level, being deficient in these key electrolytes. And with magnesium being such a big nutrient deficiency, the question is why? We probably get some in, in different foods and supplementation, and things like that, but it's because magnesium is required by so many processes in the body. It's responsible... What we know today, it's responsible for about 650 biochemical processes in the body. Again, that we're aware of, it's probably much more. But this is just what we've confirmed today.

Alright, so being deficient in magnesium, what that means is, that's 650 things your body can't do, or can't do adequately because of this one key electrolyte deficiency. Alright, magnesium is that important. Now, magnesium is also required to make the very thing that sustains our energy, that gives us energy, this energy currency of ourselves, known as ATP. Magnesium is literally required to make ATP. We often attribute this performance, or the creation of ATP to our mitochondria, right, these energy power plants, these energy power houses within ourselves, and we can have hundreds, or even thousands of mitochondria in an individual cell. It's truly remarkable. Now, here's the key. The mitochondria cannot do their job without electrolytes being present, magnesium being one, and sodium and potassium being another, functioning as what's known as the sodium-potassium pump, enabling the communication or the transition of nutrients and functionality at multiple places throughout our tissue matrix.

Alright, we need sodium, potassium, magnesium there in order for the magic to happen. So, we just talk about the end product or the end product station with the mitochondria and ATP, if we don't have electrolytes, our bodies can't do the amazing things that they're designed to do. So, in this context of ATP, magnesium is used as an enzyme cofactor that enables our mitochondria to make copies of itself. If your magnesium levels are low, then you're automatically going to have a difficult time making new mitochondria, and your health will suffer as a result. Having healthy robust, robust mitochondria, as we age, defending us against accelerated-aging diseases, accelerated-aging environmental inputs, things that speed up the aging of our cells, that can burn away our telomeres. Right? So, our telomeres are one of the best biological indicators that we have today as to how long we're going to live.

Now, the science is still pretty fresh here, I've been talking about the science around telomeres for over a decade now and having wonderful conversations with people who've been pioneering in the discovery of things like telomerase, which is an enzyme that can effectively add length back onto those telomeres, right. So as... These end caps on our chromosomes,

these telomeres, think about them like the end caps on your shoestrings, right, AKA these aglets. As our cells replicate, a little bit of that telomere gets clipped off until the cell reaches its end point, it's senescence, it's programmed cell death, and we want to... That's... That's. We want a healthy cellular replication, we don't want things to be going haywire, because that's where we get into conversation about cancer, where the cell doesn't have that programmed cell death.

What we do want to do is, if we can slow that process down a bit, so that the cells can have a longer lifespan, a healthier lifespan, and have a nice synchronization with these cells being healthier, longer, and the replacement by new cells, and paying attention to things that help to fortify and support, protect our telomeres from getting burned down too quickly. Well, we know, for example, stress burns away that... Those telomeres faster, smoking burns away those telomeres faster, sleep deprivation burns away those telomeres faster, nutrient deprivation... Alright... So, missing out on key nutrients can also expedite the burning away of those telomeres, because it's a stress response in the body, when we don't have these key nutrients. Now, why do electrolyte matters so much in the context of longevity?

Well, another piece is, the homeostatic changes that take place in advanced age that can deteriorate key signaling for electrolytes, and this data was published in the journal, JAMA Surgery, so that's, The Journal of the American Medical Association Surgery. And what's so interesting to take away from this data is that as we age, the signaling, our bodies cries or calling out for our electrolytes can get a little bit deranged. So, we need to be even more proactive in making sure we're getting these key nutrients in. So proactively ensuring that we're getting adequate amounts of sodium, potassium, calcium, magnesium, etcetera. Very, very important.

Now, what about specific data looking at electrolytes and longevity? Now, this one is pretty shocking, and this involves sodium. A peer-review study published in the European Heart Journal titled Sodium Intake, Life Expectancy, and All-Cause Mortality Revealed, "observation of sodium intake correlating positively with life expectancy and inversely with all-cause mortality." Shocking to the researchers and the scientific community at large, higher sodium intake than conventional beliefs about sodium is associated with a longer average life expectancy and reduced all-cause mortality, a reduced risk of death from all causes, according to this meta-analysis of data from 181 countries. Now, again, this is very outside of the paradigm of what we believe about sodium, and there are other confounding factors that could be attributing to the longer lifespan scene in the study, but the researchers did do a good job of accounting for a variety of different things, and sodium surprisingly stood out. And the lead researcher in the study said that just getting this paper published was so hard, it was one of the most rejected papers, and he's got a ton of peer-review studies that he's published,

he wasn't going after to prove this, it's surprising to find out that sodium has this correlation with lifespan, with longevity.

Again, causation is not confirmed, but it stood out in the data. Now, the question should automatically be why? Not just looking at what we believe to be the negative aspect of sodium, we've already covered some of it, because neglecting the fact that sodium is literally required to help conduct the impulses of your brain cells and your entire nervous system, it's required for healthy nervous system function, kind of important. It's also required for muscle contractions. It's also required to help maintain proper fluid balance in all of our tissues. So, this isn't something to just brush off, like, nah, sodium is not that important, and also, we can't have more sodium than what we're programmed to believe is where we should be at. But it's understanding, again, sodium is required for so many processes, and we can actually pretty easily become deficient in these nutrients, especially if we're taking on a healthier lifestyle. Because the majority of sodium people are taking in is from processed foods, about 70%, and this is depending on which resource you're looking at, 70% to upwards of 80% of the sodium people are taking in the average American diet is through processed food consumption.

So just by kind of cleaning up our nutrition and avoiding these heavily processed foods, which are also coming along with a tremendous amount of sugar and chemicals, pesticides and fungicides, artificial this and that, artificial sweeteners, artificial flavorings, preservatives, the list goes on and on that are damaging to ourselves, but it's the sodium that gets most vilified. And most notably because in our popular conversation around sodium, we connect those two together, sodium and salt, we use them interchangeably, but they're two different things, alright? Sodium is a part of what makes conventional salt, which is about 60% chloride and 40% sodium, so that's the "table salt." So these things are used interchangeably, and in our culture, in health conversation, sodium is often attributed to blood pressure, that's what we think about.

Forget all the other things sodium is responsible for and the critical need for sodium, it's most associated cognitively for us in our culture to be a villain surrounding blood pressure. Now, sodium is required to help to modulate and manage our blood pressure, absolutely, but in simple terms, blood pressure is... If you're just wondering What is blood pressure? It's the force that blood is placing upon the walls of our blood vessels as it circulates throughout our bodies. And high blood pressure is when that force is elevated to the point that it can increase the risk of damage to our blood vessels and the cardiovascular system overall, including our heart. So, this is kind of important. And the loudest screams about sodium is that it increases our blood pressure, which is true to a degree, to a degree. There's very little nuance here, because it's just like, sodium, watch it or you're going to die.



But here's the reality. The research that initially vilified salt many decades ago originated from animal studies that gave rats massive amounts of salt, about 50 times the average intake and deduced from that, that salt is a major concern for high blood pressure. That's where it all started. It all started. Yet, a large-scale multinational study that was recently published found that salt intake does not increase health risk even at levels that were once deemed to be unhealthy. So, what gives, how is this possible? The research has concluded that elevated blood pressure is a symptom and not a cause of cardiovascular disease and morbidity. It's a symptom of cardiovascular disease, not a cause of cardiovascular disease. And dietary salt is on a much lower rung of things that contribute to the problem, with much bigger issues being elevated triglycerides. Again, something that happens through the consumption of sugar-laden processed foods.

Elevated stress hormones and inflammation, all of these things relate directly to abnormal diet and abnormal living conditions that we're now, all exposed to today, in our modern society. Our DNA is getting environmental inputs that we just simply didn't evolve with throughout the entire evolution of humanity, if we're talking like 99.99999% of the time that humans have been here, we have not eaten foods that we eat today, we've not been exposed to this kind of abnormal low-grade stress chronically happening, and the immense amount of environmental toxicity that we're exposed to today, all of these are new things that are constantly putting a pressure on our systems, this is why we have to be even more adamant about building our health and making sure that we're more resilient and adaptable, right? Now, again, looking at sodium here and not being a major contributor to cardiovascular disease, let's dive a little bit deeper because the study also found that even up to around 2 teaspoons of salt per day is not problematic for most people, noting that there are indeed genetic predispositions for some folks who have challenges managing salt.

So, 2 teaspoons might seem like a lot. That's quite a bit of salt. That's the saltiness, that's getting a little salty, but this is because of going off the RDA, the recommended daily allowance, which is generally to prevent deficiency and disease, it's not what's optimum, that's the thing, but what's even more eye-opening is that salt intake closer to the RDA, and below the RDA of about 1 teaspoon per day, was found to actually increase the risk of heart disease and high blood pressure. Sodium too low, increased high blood pressure. A meta-analysis published in the Cochrane Database of Systematic Reviews uncovered the study of participants placed on a low-sodium diet, did have slightly lower blood pressure in the short-term, in the short-term, but found that the restricted sodium also led to elevated triglycerides, elevated stress hormones, and accordingly elevated blood pressure.

Very different story from what we hear around sodium. Now, also a study conducted by researchers at Harvard Medical School and published in the journal Metabolism, found that low salt intake directly increases insulin resistance in healthy test subjects. Insulin resistance

is one of the key components that accelerates aging, that creates advanced degradation of tissues and having not enough sodium in the diet, again, we're using these interchangeably here, but they should be pulled apart, salt and sodium. Sodium is critical in helping to modulate and manage our hormone function, including the functionality of insulin. The bottom line is that this category, this family of electrolytes are critical to the performance of our brains and our bodies with magnesium, that we touched on, and sodium and potassium, that sodium-potassium pump is critical to the support of just about every cell in the human body.

They have to be present for the magic to happen, it's that important, and even magnesium, we talked about how vital that is. Magnesium is dependent upon sodium to be able to do its jobs. So now, the key here is, yes, food first, but our food is becoming more and more deficient in these key electrolytes, but our body's need for these key electrolytes has not gone down, as a matter of fact, they've gone up because of our body's defenses and processes to deal with our abnormal conditions. Magnesium, this is the big reason why we're so magnesium-deficient is it gets sacked from the body, because it's doing so many processes, we need to have viable sources to get these things back into our tissue matrix, but we need to do this in a way that has efficacy, that has some intelligence behind it, that has some testing, because a lot of the electrolytes products out there are coming along with things that are not advantageous to our health, abnormal sugars and sweeteners, and things of that nature.

And also having an imbalance of the actual electrolyte constructor ratios that we really need, and the only electrolyte source that has done testing to find out what is that optimal amount of electrolytes, the one that I love, the one that I use is from LMNT. That's L-M-N-T. And recently, my wife took on a keto protocol, she's doing a keto experiment for herself, and she's been doing wonderful, feeling, great, all that good stuff, but then she added in some hot yoga and the first session she did was cool, the second session she was just feeling really trashed, really wrecked, very low energy, lethargic. And she was like, "I've been drinking enough water." But those electrolytes are just sweating out. When you're sweating is not just the water that you're losing is also these key electrolytes. We start off shooting those very quickly, and so I happen to have a couple of packets of LMNT that a friend gave me. Jay Ferruggia, who's been a past guest in the show when I went to his house, he gave me a bunch of them, and it'd just been sitting there for a while. And so, I was like, "Hey babe, I've got some electrolytes, go ahead and have these... "

This is one of those things that seeing is believing for me because I just wouldn't believe it firsthand, but within about 20 to 30 minutes later, she was like a new person, not only was her lethargy gone, she just felt like more energetic, more sharp, nicer, like her whole mood changed, and I'm like, "This, it can't be, that this happened that quickly." But then if you think about it, and if you think about the science, these things are absorbed so quickly into the body and start getting used within five minutes, really five to 10 minutes by so many metabolic

processes that it can make a shift that quickly, with cognitive performance, with mood, with energy. And seeing that firsthand really got me interested, and so I started to test it out myself, I couldn't believe it, at the end of a tough day, sometimes recording session, multiple hours, it could be pretty draining. It's a lot of energy, a lot of out go in addition to the hours upon hours that might go into creating something.

I might have a little bit of a lull, I sometimes have a lot of bit of a lull, but knock back some of the elements, some of the L-M-N-T, and it was as if it's not a second gear, but... Kind of like that... Like... It wasn't like a jittery charge of energy, it just, I felt like my best self, I felt really good. My mind was clear, I just felt balanced. And I rarely have that kind of experience with new things that I'm experimenting with so quickly, so I had to reach out to these guys, and not only was the co-founder of LMNT somebody who I truly admire, but again, I didn't really even know that this was... He was behind this, like he was a part of the company, but I wanted to find out what can I do so that other people can experience this? And I couldn't believe what they came back to me with, because not only was it a discount... It's not a discount, they actually said, "Hey, we can give this to your audience for free. We're going to give your audience free samples of LMNT, all they need to do is just pay for shipping and we're going to send it to everybody." So, take advantage of this right now, I don't know how long we're going to have this available with them, go to [drinklmnt.com/model](http://drinklmnt.com/model). That's drink L-M-N-T.com forward slash, model. Right?

Do this ASAP. Take advantage of this. All you do is pay for shipping, they're going to send you free sample of LMNT. See if you get some of these benefits that I experienced, that my wife experienced, that many people have been giving this to, and testing this with have been experiencing, and also just digging in, looking at the data, and all of the testimonials as well, these guys are really... They've really dialed something in. And I think a big part of it, is they really got the ratio right with the sodium, with the magnesium, and not overdoing it in certain things that we would think superficially is most important.

That Sodium is so important, and we've been primed to believe that... We think in the context of table salt, and blood pressure and missing out on all the other things, that sodium is important for, not salt in of itself, table salt, but sodium. So, this can truly make our bodies work better. Definitely check them out, get your electrolytes up, it's a big part of our longevity equation, foundational to human performance, lifespan and health span. Go to [drinklmnt.com/model](http://drinklmnt.com/model). Okay, that's drink, L-M-N-T.com forward slash model, and take advantage. Alright, so electrolytes play a major, major key here... A major role in cognitive performance, in helping to optimize cellular function... The list goes on and on. Again, I want to reiterate this, mitochondria are a big managing component of our longevity, and this... Science on this is going to just keep expanding, but we want healthy, robust mitochondria,

mitochondria cannot do their job without magnesium being present, and also without sodium, potassium, the sodium-potassium pump assisting. So really, really important stuff.

But now, we're going to jump into the third of our list of seven surprising things that can extend your lifespan, and your health span. The third thing, this is very strange, is travel. Right? Travel. Now, listen to this, this is... This surprised me. A joint study from the Global Commission on Aging, and Transamerica Center for Retirement Studies revealed some fascinating data on the potential health benefits of traveling more often. According to the study, women who vacationed at least twice a year, had significantly less risk of having a heart attack or dying from heart failure, compared to women who rarely vacationed and traveled. Men who did not take an annual vacation were shown to have a 20% higher risk of death from all causes, and about a 30% greater risk of death from heart disease.

What? How? Definitely, this is getting into the conversation on the connection with stress and stress reduction. So, travel can help with that, but also something interesting, traveling has a really interesting impact on diversifying your microbiome and your immune system. Right? So well noted, we've said this multiple times on this show for many years now, the majority of our immune system is located in our gut. Our gastrointestinal tract is a big player in our overall immune function, upwards of 70% to even possibly 80% of our immune system is hanging out in that terrain, in our gut. And so, traveling has this ability to make shifts in our microbiome, to diversify with new exposures, it changes... Our microbiome is very fluid as well, we tend to think it is this very stagnant microbial fingerprint, thumbprint, and it just stays that way, but it's fluid, it's flexible, it's changing. It's like Mystique on X-Men, alright, so she got... She can literally change her fingerprints. Alright? She can adapt, and change, and very similarly with our microbiome.

Our minds also... And this is another player here in the longevity equation. Why is this happening? It's because our minds... Your brain is a big player in our longevity, your brain is controlling so much that's happening with our biology, but your brain grows and adapts when it experiences new changes, and new environments. Right? It literally helps our brain to stay younger by changing and putting ourselves in new environments, versus that same old, same old. Right? So having this intention, like, "Putting myself proactively in new environments can actually help to keep my brain stronger, longer, younger, longer."

A study that recruited 1,500 women and published in the Wisconsin Medical Journal uncovered that women who took vacations were much less likely to suffer from depression and other mental health issues. Subsequently, these women on average had better relationships, were less fatigued, and enjoyed a higher quality of life. Mental health issues, these right now, this is currently right now, and this has been going in the wrong direction for a long time, but this is the number one causative agent behind disability right now.

It's depression, mental health issues. And we just... It's just business as usual. We don't think about that, we don't talk about that. So, what can we do to support this? Now, in this same context of relationships, because they determine that these women on average had better relationships tied in with their travel experiences, their vacationing, and we're going to talk about some of this for everybody, this is inclusive here with what we do. Like, what if we don't have the resources and the finances, the ability to take advantage of something like this? We'll talk about that in a moment. But a recent US travel survey conducted by Edge Research revealed that couples who frequently travel together report higher levels of satisfaction in their relationship. And also couples who don't travel together are twice as likely to report that their relationship problems don't seem to get resolved.

This data exists, it can be a little bit jarring, but let's dive in a little bit deeper. Other studies indicate that leisure activities with family, such as traveling can increase a sense of connectedness between family members, including children and their parents. Traveling, it really does, it adds to our character, it expands and adds to our world view, and doesn't have to be what we think it is, like, vacation. I never took a vacation in my life. I think I was maybe 31 or something like that the first time I "took a vacation," I might have had some time off from the job that I had, but I never had a "vacation" before in my adult life. So, I'm coming from a place where I understand how this might seem outside of our paradigm, and it took so much, it felt like a big risk to take my family, to put them on a plane and to go. I'm so grateful that I got to do that though, to take them outside of our normal environment. I didn't get on a plane until I was 25 years old, it was the first time I got on an airplane, alright?

Coming from where I'm from, I would see the planes passing, but I never thought about being on one, I never even thought about really even leaving my city. But taking advantage of these benefits and expanding our world view, diversifying our microbiome, reducing stress, adding to our character, it just has to be purposeful. That's the key. Because I was going through my mental Rolodex and trying to find out how have I extracted these benefits? Because so many things have helped to kind of expand my character, expand my world view and really add layers to my life and my livelihood. And so, we don't have to plan and have an expensive trip, because a big part of the reason that I am the man that I am today is because of my road trips to my grandmother's house. When we were living in the inner city, when we were living in poverty, which I say with a caveat, because poverty here in the United States means you still have a television, you have a Nintendo, you know? We still had food, but we were on government assistance programs, getting food from charities, things like that.

But each summer for several years in my childhood, I would go down, my grandmother would usually come pick me up, my grandmother and grandfather, and drive us down to "the country" in Piedmont, Missouri. And this is literally... This is backwards dirt road to get to her house, all

of that, alright? Her best friend, my grandmother and my grandfather, their best friend down there was a couple named, Elmer and Nettie. I'm not making that... Elmer and Nettie, okay? And their son, Delmer, lived in a trailer in their driveway. Elmer and Delmer, alright? They had the overalls, alright? Outhouse, everything, all of it. And me, being where I'm from, looking the way that I look, I did not fit in to this environment. But it's within this environment and changing my world view, changing what I was experiencing on a daily basis.

These are the summers that I learned how to fish with my grandfather, that we would swim in the lakes, that I learned to shoot, that I learned about different culture, not consciously, I wasn't thinking about it, but just being in that environment influenced the texture of my reality, being able to see from multiple perspectives, being able to see the good that exists in the thread throughout humanity, Because oftentimes we don't get a chance to see that. And so, getting to see that everybody really wants the same thing, everybody wants to be happy, they want to have good relationships, they want to feel good, they want to be healthy, but this is something that many people from both environments were struggling with their health, alright? When staying with Elmer and Delmer, with Delmer and his wife Linda in the trailer, which is literally you can walk outside and go to their house, their "house," which is the trailer. But Linda, and everybody was obese, everybody, everybody is obese.

She was the first person to give me a box of macaroni and cheese for a meal, and I loved her for it. It left a permanent impression upon me, Kraft... We would get the off-brand stuff, it had Kraft Mac & Cheese, the whole box to myself, please, thank you, Linda, alright? So... But those ingredients there, were ingredients for degradation, for disease, for losing their health.

But the point being this, it wasn't expensive for me to drive down with my grandparents to change my environment. And you don't have to go to the "country" to get this. But what can you do even within the context of maybe your own city? Maybe you have a staycation. In looking at... We often use a lack of resources, a lack of finances as a reason that we can't do fill in the blank. Money should never be the reason that you don't do what the calling on your heart is. Because I promise you, it's never about the financial resources, it's about being resourceful. There's always a way. There's always a way. So being more creative in that. And our relationships are a big part of those bridges that can help to make beautiful things happen.

So, I just want to implore you and put this into your mental Rolodex to make it in an intention to travel more, to get outside and expand your worldview. These are the things that help to bring humanity together. And right now, we're so divisive. In our lifetime, this is the most divisive we've ever seen humanity. It makes no sense. How are we going along with this clip in our evolution and getting more divided? It makes no sense. We're supposed to be so evolved and so able to perspective-take and to understand each other and to love. But, man, it's very conditional now. It's very conditional. In some aspects, we do have more compassion, but in

others, we're lacking in. We get into our own little bubbles, I think that's a big part of it. We get into our own little bubbles and we don't explore the world around us. Because we get comfortable. We get comfortable around the people we agree with. We get comfortable around the conditions that we're used to. And so, leaning into that discomfort. But it can be fun and joyous, of course. And traveling more.

So, what's a trip that you can plan for yourself or your family in the upcoming months and weeks? Just think about that. Just put that in a mental Rolodex, in your mental blender. Let that toss around a bit and understand the power that this has in improving our overall health and longevity. We got some really interesting data on this. It's not often talked about, but it's a pretty cool connection.

And this leads us to number four on our list of seven surprising things that can extend our lifespan and health span. And this starts with the meta-analysis of 148 studies tracking over 300,000 participants uncovered that adult with strong social ties have a 50% boost in longevity versus individuals who do not. A 50% boost in longevity versus individuals who do not.

The researchers at Brigham Young University, uncovered an upwards of 50% reduction in all-cause mortality in people with healthy social relationships. A 50% reduction in all-cause mortality in people with healthy social relationships. In fact, strong social relationships were more indicative of longevity than exercising or beating obesity. That's just shocking. That's shocking. We know that obesity is one of the leading causes of death. It's contributing to about 400,000, at least, deaths a year. So whether that's relating to type 2 diabetes, heart disease, cancer, the list goes on and on, obesity is a big ingredient in that pot that's become a big part of the epidemics that we're experiencing as humanity. So, to say that strong social relationships are more indicative of longevity than beating obesity?

Now, this is not to say that exercise and having a healthy body composition aren't incredibly important, just to be clear. But it's highlighting that there's a lot more to health and longevity than the standardized things that we're programmed to think about. Community and connection are things that are encoded in our DNA. Our genes expect us to have strong social bonds to other humans. Our genes expect us to have connections to other humans. It's how we evolved and it's how we made it to this point. Yet today, in many ways, we are more isolated than we've ever been. Now, on the surface, it can look like we're more connected than ever. We have hundreds or even thousands of friends, "friends" online and on social networks. We have Skype, we have Zoom, we have WhatsApp, we have all these things, we have FaceTime and so much more to see people face-to-face virtually. We also have access to hundreds of thousands of online groups and so many other virtual ways to connect. Virtual ways to connect. But something is missing.

A report from the National Academy of Sciences, Engineering and Medicine, demonstrates that in the United States, more than one out of every three adults age 45 and older feels lonely. And nearly one out of every four adults age 65 and older are considered to be completely socially isolated. We might think of older people as being the loneliest, but this paradigm has changed dramatically in recent years with research utilizing the UCLA loneliness scale affirming that loneliness scores are highest in Gen Z. These are people who were 18-22 years when the data was analyzed. The study demonstrated that well over half of our population feels lonely.

And the rise in social media use has paradoxically increased loneliness, with 73% of heavy social media users ranking high in loneliness scores, as compared with 52% of a light social media users ranking high in loneliness. Both are not good, but we see the increased usage of social media, leading to a decrease in levels of connectedness. Increased use of social media correlates directly with increased loneliness. That report from the National Academy of Sciences Engineering and Medicine, detail that social isolation significantly increases a person's risk of premature death from all causes, from all causes. They also noted that social isolation is associated with about a 50% increased risk of dementia. We need other humans, social connections, for the health of our brains, for cognitive function. The study also noted poor social relationships, characterized by social isolation or loneliness, was associated with a 29% increased risk of heart disease and a 32% increased risk of stroke. Loneliness was associated with higher rates of depression, anxiety and suicide. Loneliness among heart failure patients, was associated with a nearly four times increased risk of death, 68% increased risk of hospitalization and a 57% increased risk of emergency department visits.

When I say that our genes expect us to connect with other people, this is not a joke, this is not hearsay. It is required for healthy cellular function, on so many levels we still don't even understand yet. But we can just talk about on the basis of healthy hormone function. Just being around other people, for example, when having social interaction, healthy social interaction, increases our levels of regenerative, health affirming, we even call it these, "anti-aging hormones". Our neurotransmitters, our neuropeptides, our hormones, all of these are changing, based on our environment, the people we're around, the thoughts we're thinking.

Like oxytocin, for example. When people are in close proximity with people that they love that they enjoy, oxytocin just starts squirting out. It has many anti-inflammatory, anti-aging benefits, many anti-stress benefits. So, I can go on and on with why this is happening, but I most certainly want you to take away from today, that this is happening and community matters for our longevity. Awareness of this epidemic of loneliness, is the first step in changing it for the better. And I really just want you to make an intention today, to live a life that incorporates real world connection, real-world connection. It's wonderful we have technology



that we can, "stay connected", but there's something missing. We didn't evolve with this, we need other people, we need to be around other people, it's required.

And so, it's also keeping in mind what if you don't have the people in your life that you really want to be around? Your tribe exists, your tribe exists. This is the part of technology that it can really help with, because there's numerous tribes to connect with, via social media, online groups and things like that can ignite relationships, but there's something vital about taking that tribal connection into the real world, that simply can't be replaced. Alright, so I just want you to make this as an intention that you put into your memory bank, into your mental rolodex, to pull up as your longevity equation, which is having the intention to live a life that incorporates real world connections.

Now, most of the studies on centenarians, people who live 100 years or more, conclude the same thing. There are wide-ranging diets and exercise habits from centenarian to centenarian, but community and social connection consistently stands out as one of the most powerful factors for longevity. So that's another one of these seven surprising things that can extend our life span and our health span.

Now, we're at number five. Number five is really highlighted in this meta-analysis of 485 studies published in Occupational and Environmental Medicine, found that job satisfaction is one of the strongest influences on mental health issues, most notably for depression and anxiety. And I mentioned this, earlier that these are the number one disability in our world today, in our culture today, here in the United States, number one, disability. So, engaging in fulfilling work, as we're going to dive into more of the evidence here, is critical for our life span and our health span. And it makes sense because this is something often times, this is a third of our lives. At least for a lot of us, is involved in the work that we're doing, another third for sleeping, another third for everything else. It's a big part of our lives, especially here in our culture. And a third is just for starters. So, what we're doing during that time, obviously has a massive impact on our health and our well-being.

Now, the study that I mentioned already, noted the relationship between job satisfaction and physical health, as well as gastrointestinal issues and cardiovascular issues, which echo the data in several other studies, including a study cited in the Journal of Chronic Diseases, taking into consideration an array of risk factors, an array of vocations, different types of jobs, and an array of income levels, uncovered that the lack of satisfaction in the work that we do, is a significant risk factor for coronary heart disease. After looking at all these other risk factors, this one stands out. The results of this study show that there is a direct link between job satisfaction and psychological distress, as well as physical disorders.

So, the work that we do, can cause physical disorders. Satisfaction with the nature of work was the strongest predictor for psychological distress, sleep disorders, headaches, and gastrointestinal problems. That's powerful, that's powerful. It's not talked about. When you go and visit your conditional physician, they're not regularly asking you about the work that you're doing in relationship to the headaches you're experiencing or the gastrointestinal problems you're experiencing, but we have data on this, that this can be a major contributing factor. Researchers from the Ohio State University say their work shows that happiness on the job or lack thereof, appears to have the biggest impact on mid-life mental health.

One of the study authors noted, "The majority of people are either very satisfied or satisfied with their jobs, but we find that even the subtle distinction between very satisfied and satisfied has significant effects on your health. I would say our study's main findings are, you're likely to have worse health if you don't love your job rather than if you hate your job." So, I hope that makes sense. Hating one's job and being satisfied with one's job can kind of operate in the same domain. It's when you love what you're doing that you experience a jump in health benefits. The study authors noted that, job satisfaction in the United States have been declining since the 80s. Saying, "The main reason is due to increased job insecurity. People are not as sure if they will always have their job today compared to 30 years ago."

Obviously, this can be a big player and not having that sense of security, you go to work for an organization, you work your way to the top, you have the job for decades. That's not really the reality. Things are always changing and shifting so much in our world today, and so what this can do, it can create a sense of uncertainty or can create a sense of opportunity. And my advice, and I've talked about this multiple times on the show is, "To take control. To take more control of our own reality", because there is always going to be a level of doing what we need to do to take care of ourselves and our families, for sure. We're not negating that. We can't negate that.

That's the reality that I spend most of my life in. I come from that reality, and I also eventually developed the understanding that we are writing our reality. Just because of my conditions and what I was programmed to believe was possible for me, that doesn't have the final say about me. I realized that I had so much potentiality in writing the life that I want. Be it from a health standpoint, from a work standpoint, what I do in investment in work, and for me, I even use the term work loosely. It's just, "What do you invest your time in?", "What do you invest your time in that's taking care of your life structures for sure?", but for me it's like, "How am I giving value?". And you might... We've got data on this as well, you might have a job that pays your bills, but you also need to have something that pays your happiness, that contributes to your happiness, that pours into your happiness account. So, it could be both. If we open ourselves up to that, to where we're meeting our financial needs and the work that we're doing, but we've got to get rid of the belief that it's not possible for us. That's where it all starts.

And so often we don't look for other types of work because the work that we're doing sucks the life out of us. It sucks the energy out of us. So, giving ourselves permission to start to fuel and create our passion, our destiny, whether it is becoming a sidepreneur, or volunteering doing something that invests in your happiness account. It could be through your job, because that's what this study is really about for me, because so much of our life is spent doing work, and if you're not enjoying what you're doing, what does that do to our mind and our body?

Now, another fascinating study and this was published in the Journal of International Medical Research, found a direct relationship between our work environment and rates of obesity. Now, this... We can go on... We could do an entire episode just on this one piece, but what are the conditions at our work? Is it conducive? Is it encouraging of poor health? [chuckle] When I had the jobs that I had, I know that the environment that I was in, it was encouraging of me to eat terrible food, to be stressed. So, the work environment itself, this should be obvious, but we don't talk about this.

Now, one final piece here is the RP-2000 mortality study, and they notice something interesting. It uncovered that people between the ages of 50 and 70 who retire had significantly higher rates of mortality than those who continue working.

What?

They found that people who retire die faster than people who continue working. I thought retirement was good for you, great for you. Now, it's important for us to know that this is correlation and not causation necessarily. In fact, one easy confounding factor that could lead to this unexpected outcome is that folks who have poor health already and unable to continue working fall into retirement category and skew the numbers. So, I want you to keep this in context. And simply having a better state of health in our senior years would enable us to not retire if we didn't want to. So again, this is correlation, not causation but something important for us to consider, nevertheless.

What the data really does point to however, is that it is the engagement with life and having a reason to keep living that does strongly affect our lifespan. That engagement with life and sense of purpose. It could very well be the work that we do, but it could also be our dedication to our family. It could also be the dedication to our community. It could also be the dedication to creating. It could be a dedication to service. These are all things that give us purpose. And this is the thing that has a direct influence on our life span, is having a feeling, having that connection that we matter, and being able to have purpose, and contributing to something. And there are so many ways that we can go about this. You write the story of what that is, but so often being able to add value to the lives of others, whether it's through our work, whether

it's through volunteering, service, this really does something incredible for our bodies, for our minds, for our longevity.

Alright, now, we're going to move on to number six here on our list of seven surprising things that can extend your lifespan and your health span. Number six on this list is mushrooms, shrooms, not those kind of shrooms, or maybe. It's not just any kind of mushrooms. Mushrooms exist in an entire kingdom of fungi, right? It's an entire kingdom of its own. We have the animal kingdom, plant kingdom, we have the fungi kingdom. It's big. And unlike species in the plant kingdom, the DNA of mushrooms are much more identical to human DNA, right? The DNA of mushrooms are a whole lot closer to the DNA of us than any other things in the plant kingdom. So, mushrooms, there's a vibe here. There's a vibe. Now, in particular, we're talking about the medicinal mushrooms, right? So we got psychoactive mushrooms, we've got the culinary mushrooms, we've got medicinal mushrooms, and this is where the longevity equation gets taken up another notch.

So, we're going to start with some clinical data from the animal kingdom. A study published in the International Journal of Molecular Medicine, found that fruit flies given the medicinal mushroom Cordyceps lived 32% longer than the control fruit flies who didn't receive the Cordyceps. 32% longer for fruit flies. It's like another lifetime for the fruit flies. And another study, and this one was published in the FASEB Journal, found that mice given Cordyceps lived several months longer than the control group that didn't receive the Cordyceps. Directly extending their lifespan. Again, adding a couple of months. Do you know how much that is in mouse years? All of a sudden, these mice are like Master Splinter. They're having this kind of anthropomorphic mutation, and they're living this much longer life.

Now, that's all fine and dandy. So, we're looking at that in the context of these other animals, so outside the domain of human, but what does Cordyceps do? This medicinal mushroom Cordyceps has been utilized for thousands of years in documented history in Chinese medicine. We now, we've got all these new clinical trials, but this one is looking at a study published in the American Journal of Chinese medicine, found that, and this is for us, Cordyceps protects our mitochondria by scavenging reactive oxygen species. So reactive oxygen species, this is the process of oxidation, right?

So, the oxidation of our cells is this sort of like... If we think about oxidation, if you think about metal and the metal rusting, that's oxidation, so it's kind of getting old and decayed. And so, a similar thing takes place with us with us being oxidized. It's something that can contribute to accelerated aging if these reactive oxygen species get out of hand, which they do in our world today, we're exposed to so much that accelerates that oxidation, and Cordyceps has been found to protect our mitochondria by scavenging these free radicals, these reactive oxygen

species. Several human studies have also found that Cordyceps improves cardiovascular function, VO2 max, and improves insulin sensitivity as well. Again, this is linked to longevity.

Cordyceps is amazing. I've been a big fan of Cordyceps probably for maybe 17 years ago. It's when I first learned about Cordyceps. Really cool stories, if you go and look at its history as well, but that's one of the medicinal mushrooms that has so many boxes checked in improving longevity. Another one, now, this one, listen to the name of this one. In Chinese medicine, it's known as the mushroom of immortality. The mushroom of immortality. A study published in the Journal Aging and Disease found that Reishi medicinal mushroom, Reishi extracts have definite anti-aging properties, specifically through defending against excessive oxidation, improving immunomodulation, and defending against neurodegeneration. Specifically, the research has noted throughout that the triterpenes in Reishi, which is kind of these hormonally active compounds, were specifically notable in providing these benefits, but other compounds as well, polysaccharides found in there, beta-glucans, the list goes on and on. But it's so funny that in Chinese medicine, again, thousands of years, this was known as the mushroom of immortality, and now, our new science, our new ability to test and publish data, this was published in one of the leading journals, it's the Journal of Aging and Disease, found, "Hey, wait a minute, this whole mushroom of immortality thing, being able to extend lifespan."

There's a lot of evidence here now, so these are just two of this category, this family of medicinal mushrooms, but these are two of the most remarkable when it comes specifically to longevity. But the key here is, when I mentioned this in the study, triterpenes, beta-glucans, polysaccharides, the extraction method of the mushrooms matter, you can't get all of those things just by doing a decoction, like, just doing a hot water extract or just doing an alcohol extract, you need both to get all of the goodies that we're looking for to provide ourselves with, to provide our tissue matrix so we can have these anti-aging benefits. And so, this is why I'm a huge fan of Four Sigmatic, because they do a dual extraction of these medicinal mushrooms. I love their Cordyceps, they've got a Cordyceps coffee as well. And coffee, that could be a whole conversation about longevity as well, the research there is nuts.

But Cordyceps along with organic coffee, and they've also got the Cordyceps Elixir, and their Reishi. Their Reishi is incredible, it's great for just helping to reduce stress, it's great for improving sleep quality, just go on and on, it's great for optimizing and enhancing immune system function. We've got clinical evidence with Reishi helping to fortify and improve the production of our T-cells and B cells. It just doesn't get any better than that. So many things that it is hitting on. So definitely check them out, it's [foursigmatic.com/model](http://foursigmatic.com/model), that's F-O-U-R-S-I-G-M-A-T-I-C.com/model, and you get 10% off all of their incredible medicinal mushrooms. You just literally make... They're just teas, the elixirs, and there's even a hot cocoa, there's coffee blends, done the right way, organic, dual extracted, check them out,

foursigmatic.com/model. But this category of medicinal mushroom is definitely a big player in longevity, surprising for a lot of people.

And the final one here on our list of seven surprising things that can improve our longevity, improve our lifespan, and our health span, the seventh one is bacteria. A fascinating new study published in the Journal Gut Microbes uncovered that specific gut microbe signatures are contributing factors to longevity. The research is stated "age-related changes in the gut microbiome have been reported, so age-related changes in the gut microbiome have been reported, including decreased microbial diversity with aging and increased ratios of pathogenic bacteria." Alright? So, these things are associated with aging, and here's what they found, after analyzing the gut microbiome of a group of healthy long living people who were 90 years or older, they found that the diversity of their gut microbiome was even greater than that of younger adults in the control group. The diversity of their microbes was one of the contributing factors to their longevity.

They also identified several potentially beneficial bacteria in longer lived people that other people didn't have. So, let's talk a little bit about that. They noticed number one, diversity is a key hallmark of longevity. The study noted that decreased diversity was associated with increased inflammation, which they measured by a C-reactive protein, and decreased diversity was associated with decreased healthy food diversity. So, these are things that were contributing to the lack of diversity seen in other people that didn't have the longevity, alright? So, these are two things, inflammation and lack of healthy food diversity was decreasing their gut diversity. They also noted, as I mentioned, specific bacteria in longer lived people that other people didn't have, one of those was Akkermansia, alright, Akkermansia. And part of this is, Akkermansia was noted to support the production of short-chain fatty acids or SCFAs that help to repair and protect the gastrointestinal tract, and also, they provide fuel, these SCFAs, for many, many processes in the body that are protective against age-related diseases.

SCFAs are incredibly important from everything from our gut to our brain. Alright, so Akkermansia is noted to support the production of SCFAs. And another study, because I wanted to keep double-checking and working to confirm this, another study published in the Journal Nutrients, affirmed that Akkermansia was significantly more prevalent in adults who aged healthfully. It just keeps showing up again and again in the research. And it's one the things you're going to hear more about. Now, again, the key here, the Akkermansia isn't something that we have in supplemental form, like, it's not been able to be isolated, whatever, but even still, that method of trying to change our microbe cascade has not really borne out great effects in our culture yet, because people are missing out on the fact that we have to have the prebiotics to enable the flora that we want to bloom or to expand or to colonize.

Without the right prebiotics, the foods that these probiotics require, then they can't stick around, and they can't make the postbiotics in you for you. So, you need prebiotics for the probiotics to make your postbiotics, which the postbiotic, for example, is the SCFAs. But here's one of the things, because Akkermansia is tricky, it's tricky to be able to get that, to have that abundant in our bodies, but we know it is associated with longevity, significantly, study after study. Listen to this, a study conducted by researchers at UCLA uncovered that compounds in pomegranate are among the few things, the very few things discovered that can stimulate the blooming of Akkermansia. Pomegranate. Alright? Now, this isn't a push to go start guzzling the pasteurized pomegranate juice, alright? With a lot of sugar. I'm not saying that, but maybe adding in some pomegranate somewhere in your nutrition or a concentrate of it.

But also, another study published in the Journal Gut, found that camu camu berry, camu camu, led to positive changes in the gut microbiome. Camu camu berry led to positive change in the gut microbiome, including the expansion of Akkermansia. I love camu camu, been a fan for many, many years. Big part of the vitamin C complex at Paleovalley, that's the one that I use. Go to [paleovalley.com/model](http://paleovalley.com/model). And that vitamin C complex is incredible. I'm just going to leave it at that. So, pomegranate, if we're going to do pomegranate to the real food, but also it might not be the ratio that we really need, so maybe an extract or concentrate of it somehow, and also camu camu berry, is that deal, when it comes to the expansion of Akkermansia. Also noted in the study, in the journal, Nutrients, that we talked about a moment ago, the most long-lived adults were found to generally have lower levels of Firmicutes and increased levels of Bacteroidetes. These are both categories of bacteria with Firmicutes.

Matter of fact, I'll just share this study with you. This study was published in BMC Microbiology, and they found that individuals who are obese, have a significantly higher level of the bacteria Firmicutes and a lower level of Bacteroidetes, compared to normal weight and lean individuals. It's proposed that a higher ratio Firmicutes in their intestines, make them more efficient at metabolizing food, so instead of it being lost as waste, more calories make their way into their circulation and eventually get stored as fat. So again, long-lived adults, in the previous study were found generally have lower levels of those Firmicutes and increased levels of Bacteroidetes. Really, really, remarkable tie in here.

So, diversity is key. We want to maintain gut diversity, because it's one of the things that gets hit as time goes on, in our culture, as we age. So, we want to proactively improve our microbiome diversity. The number one way to do that, as noted in the research, is having a healthy diversity of foods, to provide an array of different prebiotic compounds for our bacteria. So that's one big way. The other thing is, simply being... And another part of that was, not just gut diversity, but have it with... Probiotics or friendly flora, but maintaining and keeping in check pathogenic bacteria, because we're going to have a ratio of all of them, but we don't want the pathogenic bacteria to get out of hand. This is a big, big player here.

So, we want to protect our friendly flora, keep pathogenic bacteria in check, so we want to avoid the things that disrupt our microbial ratio. What are the things that promote the proliferation of pathogenic bacteria and kill our good flora? One of those things that's confirmed in the data again and again and again, are the use of pesticides, herbicides, rodenticides. Those compounds are designed to kill small things, your gut microbes are small things, and they're incredibly sensitive. Antibiotics, for example. We talk about antibiotics, they're anti-bacteria, they're anti... The word itself means against life, which is kind of messed up, it's kind of strong. But the bottom line is, antibiotics destroy a plethora of our microbes. There are very few that are specifically selective in their destruction, so we want to be careful about haphazard use of antibiotics. But pesticides, they're either estrogenic or neurogenic, oftentimes, and they're very, very disruptive to our microbes, even damaging the genetic make-up of our microbes, because we don't just have genes, our bacteria have genes as well.

And we'll talk about that more in a moment, but a study published in the journal, Chemosphere, uncovered that the intake of one of our most widely used pesticides, called Chlorpyrifos, can promote obesity and insulin resistance. So. This particular pesticide, massively used, you would think, if we've got clinical data that it's causing these problems, it would be banned. Nope. Caught up in red tape right now. And actually, there's 34000 pesticides, derived from 600 synthetic chemicals, that are registered for use in our country by the EPA. So, the Environmental Protection Agency, supposed to be protecting the environment, we're part of the environment, 34000. And that's just that, because there's another 85000 more chemicals that are regulated separately under the Toxic Substances Control Act. This is the environment that we're operating in. So, when I'm talking about really fortifying our health and protecting our cellular function, our immune system, our hormone function, I'm being very serious about this. We don't live in the conditions that we evolved in, but we can do something to make our bodies more robust and healthy and adaptable.

So last piece here, a study published in the journal, Scientific Reports, revealed that pesticides create a pro-inflammatory state in the gut and disrupt microbial gene expression. Say less, say no more on that one. That's messed up, that's messed up. And finally, in reducing the prevalence of pathogenic bacteria protecting our friendly flora. Another study from Scientific Reports noted that the disruption of our microbes from common food-borne chemicals from processed foods, is a prevalent issue. Because again, it's not that our microbes just show up and do whatever. They eat too. And the pathogenic microbes really like processed foods, funny enough, surprise, surprise. And sugar, for example, the massive amounts of sugar that we're consuming, again, 70 to 130 pounds per year for the average person here in the United States. A study published in Proceedings, of the National Academy of Sciences, demonstrated that sugar "silences genes that regulate the proliferation of beneficial bacteria. Specifically, sugar



appears to negatively impact the colonization of bacteroidetes populations, that are crucial in regulating our metabolism."

So, to help to modulate and support our microbiome, is key in longevity. We know there's specific signatures, microbial signatures, that are supportive of longevity, that we see in people who are living 90 plus years, they've got microbial diversity, they also have unique microbes that a lot of other folks, as they age, they lose out on, like Akkermansia, for example. So, this is a plethora of insights and resources for us to consider, as we move towards our upcoming decades, and not just extending our lifespan, but extending our health span, so that we can be the best version of ourselves. If you got a lot of value out of this, please share this out with your friends and family, the people that you care about. But most importantly, employ some of these things, think about some of the data that we've gone through and what really stands out to you. What are some things that you could add into your longevity equation, to keep you healthy, happy and adaptable for many, many years to come? I appreciate you so very much for tuning in and hanging out with me today. We got some incredible shows coming your very soon, so make sure to stay tuned. Take care, have an amazing day, and I'll talk to you soon.

And for more after the show, make sure to head over to [themodelhealthshow.com](http://themodelhealthshow.com), that's where you can find all of the show notes, you could find transcriptions, videos for each episode, and if you got a comment, you can leave me a comment there as well. And please make sure to head over to iTunes and leave us a rating to let everybody know that the show is awesome, and I appreciate that so much. And take care, I promise to keep giving you more powerful, empowering, great content to help you transform your life. Thanks for tuning in.