Circadian Rhythm and Chrononutrition Transcript

(Transcripts are generated by AI and may contain errors)

Webinar Welcome and Series Overview

Hi, everyone, and welcome to the Mamanza Longevity Webinar Series. This is a free series that is offered for the fall of 2025. And it's a new series, that's just beginning to educate those who are interested in longevity and functional medicine.

on some of the new topics, but also incorporating some holistic topics as well in this beautiful and exciting field. I'm Dr. Mi McGeer. I'm a functional medicine and longevity medicine physician with a practice based out of Los Angeles.

And I am also running an online cleanse program, which I'll tell you about at the end of today's webinar series. So, I'd like to introduce you a little bit to the whole series and what we're going to expect in the next five sessions.

Again, this is open to whoever would like join. It is free for those who would to be a part of this community. If you'd to join this webinar series, there's a link that's offered in a document that will be sent out.

If you look at the actual invite, there's a document there where the link is available and you can sign up and receive the reminders about this series.

And for those of you who signed up, you'll be receiving in your email afterwards the recordings as well as any updated information and links. and some educational material.

So I'm going to get started today by sharing my screen and sharing with you some of the interesting and exciting things that we have in store for the next few webinars coming up.

Okay, so hopefully you can see my Yes. All right, so this is going to be a free series for the next five sessions and then we're going going go into next year where there will be.

A membership being offered as we start to get more into protocols into the year or so. Again, it's a longevity mastermind series to really help educate those of you who are either physicians that are interested in learning more about longevity medicine and personalized genomics.

What some of the latest information is also from the wellness fields in this area. So I'm going to be covering some really broad topics here. It's also for those of you who are patients and health seekers that want to learn a little bit more about your health and deep dive into the why behind some of the conditions.

So it is a very scientific focused seminar. It is evidence based and I am trying to provide you with some the most interesting topics but really rooted and grounded in evidence.

So all of our sessions will be at 7 o'clock Pacific time on Thursdays. Again, these are going to be recorded. For those of you who are international, who're watching from the East Coast, you can always follow along the next day.

I don't want you to disrupt your circadian rhythm just for this. And if anybody's interested in joining, You can actually share this document.

Session Topics and Circadian Rhythm Introduction

It's again available in the link when you register. This can be shared with others who want to register as well. So that so that everyone can have access to the recordings.

So today we're going to start first with talking about the first session, which is circadian rhythm and food timing.

This is a very interesting topic.

There's a lot of great science behind it. And it's personally something very great interest to me. As I start to learn more about the circadian rhythm, my training also includes a background in nutrition so I have a master's in Nutrition, as well as learning about Ayurveda which is a deep Indian health system that is based on circadian rhythm and many of the eastern systems actually follow circadian rhythm biology and it's fascinating to see how this is translated in the new science that's come out on this topic.

So we'll be diving really deep today in circadan rhythm, biology, and looking at how genes are actually impacting our microbiome. We're going to talk about why eating at the right time can reduce your inflammation and improve your overall sleep, how your genes in your microbiomes actually respond to light-dark cycles, and how there are practical mealtime strategies for enhancing your energy and your overall longevity.

We're going to then end with a sample 24-hour rhythm plan on what you can actually take home and start to implement about your sleep, your waking, you're meal timing, and you movement.

I'm excited to get into that topic, but before I dive in there, let's go on and I'll share with you what's coming up next as well so that you could know what our future topics will be.

So next session is going to be following Thursday. We'll talk about personalized nutrition and the microbiome, diving right into nutrigenomics and gut microbiomes science, as well as different body types.

Why one size fits all diets never really work. There is a lot of science now proving that no two people can eat the same and we can't use generic nutrition for everybody.

So your food choices actually nourish your gut microbiome ecosystem and how your genes are influencing the way your digestion is working is very, very important.

So we have some great access to nutrition science these days that we never used to have before and even more specific information about the microbiomes and about And so this is actually part of how I practice and what I bring to my patients.

And I'm so excited to share this with you all in this educational webinar so that you can start to learn how important these these genes can be and how you start use them in your day to day life.

Then after that, we're going to dive into detox pathways for vitality. We'll get into what is detox, what are the different types of detox the body does, how your genes influence these pathways and some ancient purification practices that are available.

to help support the body cleanse and detoxify. The session after that will go into November. We'll talk about hormones, stress and nourishment, how to balance the nervous system through food, lifestyle and spiritual practice.

Hormone health is so important when it comes to aging and maintaining your vitality. So they play a critical role in maintaining longevity, but also They interact directly with stress, diet, and your trauma histories actually influence your hormonal balance.

So we're going to learn about all things related to hormones and things that you can do at home to help balance your health. Next, in December, we will talk about the Longevity Blueprint.

Here we'll talk the integrating science and spirit into a personalized wellness plan. We're going to look at the synthesis of genomics, personalized artisan, functional medicine, and spiritual wellness for longevity.

So right before you go into the holidays, you're gonna take with you the pillars of longevity for modern science, ancient wisdom, how to design your personal longevity blueprint.

So why integration of your mind, body and spirit is so key to your overall health. So I'm excited to share all these great topics with you this year. We have many more very interesting topics coming up next year, and if you are interested in continuing and learning more next, please stay tuned.

All of these will get recorded and be sent out over email and eventually be available on YouTube as well. So let's get started with today's topic which is our first session on circadian rhythms and food timing.

Now how do genes light and meals actually interact with your health and longevity? What if I told you that the time that you eat your dinner tonight will literally reprogram the clock genes in your fat cells by tomorrow morning?

So tonight we're going to explore how meal timing, gene light, and your microbiome interact not only in energy but also for sleep and it also influences your long-term risk of disease like diabetes, obesity and accelerated aging.

So we know a lot has gone on in science. There's a a of media around time restricted eating. But what we don't hear about too much, but the science really backs is meal timing and how it rewires your body's clocks.

So meal-timing actually entrains what's called the peripheral clocks The peripheral clocks are clocks that exist inside your body that are actually independent of light.

And these meal times by themselves, the time that you eat your meal, controls these different clocks, again, independent light, so there have been studies that have done, for example, these controlled human trials that show that when you're eating late meals, they actually delay your glucose rhythm and they shift your adipose per two-clock gene expression.

Even if it's one hour of changing your meal time, it demonstrates that feeding time can actually independently reset your peripheral clock. So that shows us that the time we eat is important.

Clock Genes, Hormones, and Meal Timing

The question is, how does this work? Well, there are feeding cues. like insulin and the amino acid that comes in. There's also NAD plus insert and mTOR that acts as zeitgeibers and they're basically little signals that come in into the body.

And they turn on and off different clock genes, like, for example, genes of the liver and the adipose tissue, and they cause phase shifts in these clocked genes.

So these cues that are coming from the body are shifting your genes downstream in their metabolism. So here are some of the genes that we can actually look at today, and they're available in some our genomic add-on reports.

There's the per gene, like per one, that's associated with morning and evening preferences. And variants in this per-gene can shift your circadian rhythm phase.

So, for example, you might have a certain variant of this that tends to make you more of a morning person or more an evening person in terms of your preference.

That's actually written in your genome. There's the Perttu variant that actually is linked to delayed sleep phase disorders and evening chronotypes. This particular phenotype is also tied to mood disorders, and cancer susceptibility.

So you can imagine knowing this information upfront can be very helpful if you are someone who's more prone to mode disorders or has a family history of cancer.

The PER3 genotype is actually a variable number repeat. And this is, again, it's not a SNP. It's called a VNTR. and it is widely studied because it influences sleep architecture and vulnerability to cognitive impairment under sleep deprivation.

So there have been a lot of studies that have linked Alzheimer's disease to sleep depravation, and when you look a little bit closer, the genomics of that, there's actually possibility that the PER 3 variant is actually involved.

So this is an example of one of the genes. There's also the cry genes, but these other variants that affect sleep phase disorder and also cry two that's affecting seasonal affective disorder in alternate alternative circadian entrainment.

And then there's the clock gene, which is one of the most studied SNPs, and it's associated with this idea of chronotypes, the evening chronotype. And these evening types tend to be people who sleep later.

Their sleep duration can go from later in the evenings to later the morning. They are at risk of obesity and mood disorders as well as metabolic syndrome.

So even though there are people that are genetically more prone to be evening chronotypes, this does put you at higher risk of certain conditions. And then there's this other clock variant that's also linked to chronotype and metabolic regulation.

So a lot of these genes were actually discovered back in 2017 when the Nobel Prize was actually awarded to a group that uncovered this molecular clockwork of circadian rhythms.

It's been around for quite some time, but we're not yet fully using this in clinical practice or even in nutrition science. But their discoveries have revealed how nearly all cell types are keeping time.

and they're linking circadian biology to sleep, metabolism, mood, and also chronomedicine. So this is really the future of medicine. It's how we currently practice pharmacology, but it's not yet how were practicing our day-to-day lifestyle.

So we know that, you know, cortisol is released early in the morning, usually around six o'clock. And then we see an increase in blood pressure. That's what gets us up in morning.

Makes us more alert. We have our highest coordination, the peak of the day, and our fastest reaction times early the afternoon. Actually, body temperature is usually in evening.

It's a healthy response. And your highest blood pressure is a little bit later in the afternoon, melatonin starts kicking in and then you go into deep sleep.

And the idea is really to be in deep asleep overnight. This is when your body temperature drops and you cycle again when the cortisol actually comes back up and releases.

So what this means for those of you who are late night people or eating dinner late is that your dinner literally can change your molecular clock and it can affect your fat cells just overnight.

Human studies show that delayed meals by just five hour shifts, they actually affect the per two clock gene rhythm in the adipose tissue. That means that food timing can actually reset your peripheral clocks independent of the brain's master clock.

There's this concept of early time restricted feeding that improves metabolic physiology even without weight loss. So there's a lot of studies that have been done looking at fasting states and different times of eating.

And they've shown that if you are doing this early-time restrictive eating, in other words, eating in a time-restricted window and having your last meal by 3 p.m., There's an improved insulin sensitivity, an improve beta cell responsiveness, improved blood pressure, and decreased oxidative stress.

So you can just see that there is a significant benefit in the physiology and this is in a highly reputable journal cell article that has been published.

Another important point is that even, like I said, one late night dinner can flip your fuel cycle, right? So, circadian misalignment can actually acutely induce insulin resistance and raise your blood pressure.

So even one or two meals that are off time can have this effect in the body. It may or may not last, but if you do this in a prolonged manner, it will probably cause downstream effects.

So force misses iron protocols, for example, they've done studies in shift workers where they shifted their meal timing, their working overnight and shift their mealtiming to eating during the night and sleeping during day.

They found that postprandial glucose rose into the pre-diabetic range just by forcing them to change the circadian rhythm habit. Okay, so you can imagine those who are unfortunately in these roles where they're working overnight, they have to work very hard to maintain their diet and their exercise balance so that these changes don't happen and need to be constantly checking their blood glucose and monitoring their risk for pre-diabetes and diabetes.

There's also been independent studies showing that misalignment increases inflammatory markers and diabetic risk beyond sleep loss. A randomized controlled trial found that late night dinners reduced fat oxidation overnight and they increased glucose excursions and worsened metabolic flexibility, especially in the early chronotypes.

So again, these are now the people that tend to wake up earlier in morning. They're finding that they actually had worsening metabolic flexability when they're having late-night dinnners.

If you happen to be a morning person, and you're eating late at night, you are at a high risk. Late eating impairs glucose handling, and melatonin biology matters a lot.

So there have been random and controlled trials or crossover trials that showed that late dinner reduced fatty acid oxidation and mobilization and produced overnight glucose intolerance, again, especially in the early chronotypes.

They also found that genetic and endocrine interactions with certain genotypes, for example, those with the MTNR1B risk carriers, this is a common allele found in type 2 diabetes, They show a worse glucose tolerance when eating under a high endogenous melatonin.

So again, late in the evening, these people with this particular allele are showing worse gluten tolerance, when they're eating late at night. Same thing is repeated here is that it's not ideal for either chronotype to be having late night dinners.

So just to kind of look at this overall hormonal kind-of milieu that we have here. We've got melatonin coming in, you know, usually about 10 o'clock at night is when melotonin starts to get released.

As long as it's dark outside and you turn off the lights, and your allowing the darkness inside your home. You don't have lights coming into the window.

Naturally, meletonin will start to release around this time. For those of us who are working very late, staying in front of the computer, we're actually depriving ourselves of this natural state.

So melatonin is going to go all the way until when light comes in in the morning. It actually stays even after, stays high even, after you wake up till about 9 or 10 a.m.

And then you have other hormones that kick in throughout the day, many of which are involved in hunger and metabolism. Some are in involved fat storage and fat metabolism, others involved glucose metabolism so all these hormones you can see have a very beautiful circadian clock and they actually are coming in at the right time in your body.

Now this shifts when we don't allow these natural cycles to occur because of our lifestyle. So it's very important to understand what the body naturally does and how you can bring your lifestyle back into balance to promote the

natural release of these hormones.

Basically, the main thing to note from this figure is that sane calories are not going to be burned at 10pm versus what you would be burning at 6pm. So again, because when you're eating later at night because of the hormones that are up or down in the body at that time, late meals are going turn off fat burning while you sleep.

So for example, leptin, which was on that diagram is a hormone that is known to suppress appetite. Leptin is produced by fat cells and it acts on the brain to signal the body that it's got sufficient energy stores.

So going back to this diagram, Lepton is released around 4 p.m. and actually stays into the evening till about 2 a. m. Again, sleep disruption is going to affect that as well.

Adiponectin increases insulin sensitivity. So that's another fat produces adipinectine. Insulin sensitivity helps cells use glucose for energy and this reduces the risk of type 2 diabetes.

When adepinektin is disrupted due to lifestyle and stress, this can actually affect the insulin's sensitivity and the ability of the body to respond to glucose.

Then there's a hormone called ghrelin, which is known to stimulate hunger and food intake. Ghrelan has specific times that it gets released throughout the day.

So you have hunger signals that naturally come in at 8 a.m., 1 p. m., and 6 p, m. Isn't that amazing? These are the times we naturally eat. And for those of us who are kind of playing with this and not necessarily following these natural signals, we're actually altering these hormones in the body as well.

Then there's this hormone called FGF21. It acts as a key regulator of energy homeostasis and metabolic health. And basically improves insulin sensitivity and it promotes glucose uptake, enhancing fatty acid oxidation and reducing oxidative stress.

So the body actually increases FFG21 production in response to metabolic stress and energy imbalances, including those caused by poor sleep. Sleep deprivation disrupts circadian rhythm and metabolic homeostasis, which the body then tries to correct by increasing FGF21.

So there's a beautiful intricate balance with all these hormones and the circadian clock in the Your genes actually dictate your dinner cutoff. So there's this gene we talked about earlier, the allele MTNR1B.

It's a risk alleol that's been known to link to type 2 diabetes and shows worsened glucose tolerance if people eat when melatonin is high. That's why eating late at night will actually increase your fat storage.

And it's important to know that circadian misalignment creates instant disease physiology. It's immediate. So these changes can be measured within a few days of these disruptions.

If you imagine you've been doing something that's disrupted your circadian rhythm for a year or two years, likely it is contributing to chronic disease.

And this is what's shown in this example I talked about earlier with shift workers studies. They found that a few days of circadian misalignment, just a couple of days, pushed perfectly healthy adults into pre-diabetic glucose ranges.

So living off rhythm doesn't just feel bad, it creates immediate disease signatures.

Chrononutrition, Exercise Timing, and Biomarkers

There's also an interesting correlation with exercise timing to optimize metabolic health. It's suggested from studies that have looked at meta-analyses have suggested that afternoon and evening workouts improve glycemic control

more than morning exercise in people with metabolic risk.

Again, this is going back to this idea that we can actually create an ideal lifestyle plan once we start to understand the genomics, what your risks are, and what's actually happening inside your body.

The other interesting contribution that we know about is that there's this clock that actually exists in the microbiome itself as well. So gut microbes actually oscillate by the hour and mistimed eating can flatten these rhythms and disrupt the host metabolism.

In other words, the rhythms of the bacteria themselves, when disruptive, create metabolites that go back and interact with the person who's hosting those vectors, the human, and can alter their metabolism independently of everything else we've just talked about.

So the gut microbiome is circadian itself and food timing actually controls its function. They've done human and mouse studies that looked at intestinal microbiota and they showed diurnal compositional and functional oscillations that are feeding time dependent.

Mistimed feeding patterns in these bacteria actually flattened the rhythm and affected and perturbed the host metabolism. So the consensus is that the future of nutrition really looks like chrononutrition.

And this is this concept that we have to start looking at food timing along with what we're eating as a cardiometabolic lever. So a way that can actually help people mitigate their risk for cardiometric metabolic disease and also prevent disease in the state of longevity.

A 2025 scientific review showed that the timing of the first and last intake, the eating window length, and regulatory modulate energy balance, glucose homeostasis, lipid metabolism, body composition.

Regularity, modulate energy balance, glucose homeostasis, lipid metabolism, and body composition. So all these things we've talked about, eating window length, the timing of the first and the last intake, are basically part of this regulation pathway of energy balanced glucose, homeo stasis and lipids metabolism as well as body compositions.

In other words, we are going to start looking at food timing as part of how we're dealing with chronic disease when it comes to working with your nutritionist, as well as working your doctor.

Now medical treatments currently, like pharmaceuticals, are already thinking about chronobiology. For example, when we think about statins or cancer drugs or anti-hypertensives, We're timing them about like according to when you should be taking them during the day based on circadian rhythm and based the actual pharmacogenetics and pharmacobiology of the actually release of this substance inside your body.

So we are already looking at timing when it comes to pharmaceuticals but we're not looking our individual lifestyles. and how important this is in our health and wellbeing.

So ideally you would think about this for your own life and take a few minutes and really think of your 24 hour rhythm. When do you wake up? When you first move?

What's your first movement of the day? when do eat? in alignment with light. So really think about the timing in which you're waking up and is there light around?

Are you allowing sun into your house? You're opening the windows, that kind of thing. And when you are resting, are you turning all of your devices off?

Or are getting rid of the blue light, closing the curtains? And what are your goals for your health? I think for the most part, The majority of the people that we see in medicine are at risk of some form of cardiometabolic disease either in the state of diabetes or cardiovascular disease or neurodegenerative disease, or other diseases that are related to those functions in their body, including cancer.

So it's very important as part of prevention, even early in life, to start to think about this when you're working out, when your going to the gym, or when eating right.

You also should be thinking about what time you are doing these things. So the framework is wake up with the first light exposure in the morning. That is the ideal time to wake-up.

Now, there might be one or two days when things have shifted, but we've seen from the studies that even one of two day can have a biological effect. So we want to make sure, as much as you can, to wake up with that first light exposure in the morning and have it be natural light, the sunlight that comes in through your eyes and affects the suprachiasmatic nucleus in your brain and turns on all these hormonal functions.

Next is like, what time is your breakfast? So with today's influence of social media and different ideas about meal timing, a lot of people are skipping breakfast.

As we talked about the ghrelin and the different functions in the body, there's different things that you should be thinking about when it comes to hormones and skipping So usually for a balanced meal, you might want to have something that's more higher in protein first thing in the morning that is going to sort of get your body started and give you the energy to start your day.

But the question is, what time is that? There is actually an ideal time to even have breakfast according to circadian rhythm biology. It's usually between eight and 10 in A very light meal that's going to just start getting your rhythm going.

Not a very heavy American style breakfast that we have been taught growing up. Really just a light meals should be enough to get some of the biology kick started.

And usually there's an exercise window in the morning, but we have actually shown in that study that I showed earlier that the evening is even more effective if you have metabolic risk.

So take your pick. You could either do morning or evening. Between 8 to 10 a.m. is a good time. between 6 to 8 p. m. Is a time based on circadian rhythm biology to have some movement and exercise to help your metabolism.

Lunch is a very critical meal when it comes to circadian rhythm biology. This is the peak time of the day when the metabolic functions are highest, and it's when you get the most metabolism, the more benefit from the food that you actually eat, you're able to absorb it the best.

So lunchtime ideally would be between 10 a.m. and 2 p. m. So it could be a brunch window or it can be lunch that's shorter between 12 and 1. But it's very important to try to get that middle of the day meal at lunchtime.

And dinner is usually something that is lighter ideally for the body because you're going to be sleeping overnight and it is difficult to metabolize heavy foods while you are sleeping.

Dinner cutoff time is usually three hours before bedtime. And again, following circadian rhythm biology, your bedtime would be coordinated with the cycles of the sun.

So once it's dark outside, you really should be thinking about ending your last meal at that time. That's going to shift in the winter compared to the summer a little bit, but always maintaining that number, if you can, of at least three hour before bed time to have optimal dinner cut off time And then giving yourself time at the end of the day to wind down is so important because we're in a very high stress state.

We've often taken in lot of information, a lot toxins throughout the days. Making a nice wind-down routine to help your body sleep well is another very important part of health and well-being that is aligned with circadian rhythm as well.

And then having a goal for your sleep. Sleep is one of the most important health indicators. And when sleep starts

to depreciate or go down, that's when chronic disease starts increase.

So we want to really prioritize sleep, we talked about the different hormone cycles and melatonin, how that is optimal overnight in the dark. Maximizing on the great effects of melotonin for the body by getting optimal sleep every night should be your goal.

So based on evidence, eating windows should be about eight to 10 hours. Most days earlier is better for insulin sensitivity. Usually you're anchoring your first meal within one or two hours of waking.

And like I said, it does not need to be the typical American meal. It can be very light with a little bit of protein. The midday meal is very important.

That last meal should at least be three hours before bedtime. And keep this regular, because remember, even just a little bit of a shift tends to create a biological change.

And there is this thing called chronotype tailoring. So we can make some slight adjustments once we look at people's circadian rhythm genes. We find out if your earlier late chrono type, there are some adjustments that can be made.

But remember that when you are an early clomoronotype, like the research showed, you're more likely to have adverse effects if you were eating late dinners.

Now, for those who are at home that are really interested in following along and working on your circadian rhythm, following it along with your glucose and timing this, there are some great devices that that're available.

Continuous glucose monitors help you measure your Glucose. Usually from a physician's standpoint, they are prescribed if you are diabetic or pre-diabetic, but they're are available commercially as well and you can actually look at your glucos levels after meals and understand what these late-night meals are actually doing to your body.

There's also heart rate variability as a way to measure what's happening overnight. Looking at whether or not these earlier dinners are gonna be helping your heart-rate variability is also another metric you can look at.

There are sleep metrics like OSA risk permitting. So basically, people who are at risk of sleep apnea, there are different metrics that you could use in order to look your overnight sleep matrix.

There's also blue light cutoff times and waking times should be very regular for those that are at risk of sleep apnea as well. And you wanna measure your weight and your waist and you're morning blood pressure.

That's another few metrics that can be very helpful when you kind of looking at your risk factors around circadian rhythm and metabolism.

Kosher Cleanse Program and Closing Remarks

And there are some labs that we can done with your doctor where you look at fasting insulin, HOMA-IR. For those who are pre-diabetic, they could do an OGTT AM versus PM looking the differences in the morning and the evening for your glucose metabolism.

There are lipid profiles with fasting triglycerides. Usually you would get this as part of your regular panel, but there are more complicated liver panels that will look at your risk factors for cardiovascular disease that you can get with a cardiologist or with the functional medicine doctor.

And there also ways to measure your inflammation and your hepatic risk. Also very important when we're talking about fatty liver disease, we are looking at the liver enzymes and stress effects on the livers itself as related to poor lifestyle and circadian rhythm dysfunction.

And then as I mentioned during the webinar that there are chronotypes like melatonin genotypes that we can look at in the genes. So I do offer genomic testing.

For those of you who are interested, there is a genomics profile that you can do to take a look entire genome and we can look at these different nutrigenomic as well as circadian rhythm genes and your metabolism genes to see what the best design is for your lifestyle program based on your own genomics.

So I just wanted to pause there and just open up for any questions, if there are any that have come in from the chat. And then I'd like to share with you an opportunity for a circadian rhythm program that I'm actually gonna be launching this coming week.

So let's see, are there any question in the chats? Okay, well, if there's no questions, I'm gonna just continue on. And for those of you who have any questions when you're looking at this later, we can bring it up to the next webinar and we could review a couple of questions from there as well.

So just before we end today, I want to share with you an exciting new program that I'm launching, it's called the Kosher Cleanse. It's actually an old program I created a few years ago, but it has been revamped to include circadian rhythm biology.

We're starting with a 21-day reset gut cleanse. This is going to be an Ayurvedic-inspired cleanse, so it is following nutrition, circidian rhythm science, and lifestyle rhythms.

that are based on the ancient principles of Ayurveda combined with functional medicine. Our focus in this program is on gut health, hormonal balance, energy and detoxification, sleep and recovery, balancing your weight and nutrient optimization.

The program will include daily rhythm guides, so we have meal preps and recipes available for you. There's going to be some movement and activities, breath work involved in the program, as well as guidance around sleep to help optimize your circadian rhythm.

You're going learn about more details about food timing and when to eat what. and how to design your exercise, your lifestyle routine based on the circadian rhythm.

We have a focus theme that includes gut reset, anti-inflammatory foods, restorative sleep, and nervous system balance. The program includes two weekly Zoom teachings and Q&A calls and an optional Sunday reflection call.

When you sign up for the program, you receive a KOSHA Cleanse PDF, recipes, shopping lists and a reset tool and an invite to the private WhatsApp community for accountability and connection.

I will be hosting these calls myself along with the Sunday Q&A call and leading the WhatsApp Community. So who is eligible for this program? It is for those who are in health and wellness, so that are looking to improve your wellness.

Those are interested in longevity as well as those, who want to optimize their energy. Now it is not suitable for some people, those of you who, are pregnant or breastfeeding, Those who have acute illness, recent surgeries or active injuries should not be doing this programme.

And the supplements that are advised in the program are optional. It's always encouraged to work with your licensed doctor before starting any supplements.

This is a 21-day program, priced at $333, and the document that you'll receive after for registering for this webinar will include the registration link and a link to the community.

So I'm Dr. Mi McGeer, and I am excited that we've started and launched our five-week series of this Mimosa Longevity Mastermind series. And today's topic was circadian rhythm biology and how that affects our metabolic

health and our well-being.

I look forward to hearing from you if you have any questions. Again, this webinar is recorded. It's going to be distributed to those who've signed up on the list, And it will later be made available on YouTube as well.