



Hormones: how they impact every aspect of your brain function, moods and wellbeing, and how to optimise them for better mental health.

with Dr. Felice Gersh

[The MindHealth360 Show](#)

Episode Transcript

Host: Kirkland Newman

Guest: Dr. Felice Gersh

The MindHealth360 Show - Dr. Felice Gersh

Kirkland Newman:

The MindHealth360 Show is brought to you by the London Integrative Mental Health Clinic, which provides the full 360 degrees of mental health, diagnosing and treating the root causes to your mental health symptoms. To find out more or if there's anything in this episode you'd like help with, please find us at integrativementalhealth.com.

Dr. Felice Gersh:

You're like a medical detective and you're looking at okay, what are your environmental toxicant exposures? Do you have, say biological toxin exposures, like chronic infections and so forth, mould, mycotoxins. What's your stress level? What is your sleep like, your nutritional status? What's your gut working like? And so on. So it's really foundationally getting to the essence of how the body works and the link between all the organ systems, and recognising how the brain at the top of the heap is interlinked with every organ system. When you put all this together, the ultimate outcome for my patients is like night and day from what it was before.

Kirkland Newman:

Welcome to The MindHealth360 Show. I'm Kirkland Newman and if you, your loved ones, or clients suffer from mental health issues such as depression, anxiety, insomnia, poor memory, poor attention, mood swings, exhaustion, etcetera, I interview the leading integrative mental health practitioners from around the world to help you understand the root causes of these symptoms, many of which may surprise you and suggest solutions to help you heal. If you like this interview, please do subscribe and forward to others who might find it helpful. If you want further information, please go to www.mindhealth360.com or find us on social media.

Kirkland Newman:

Dr. Felice Gersh, welcome to The MindHealth360 Show. I'm so grateful to have you here. I love your book, I love your lectures. I first saw you at the integrative mental health conference speaking and you're absolutely fantastic. I'll just give a brief bio so that people can know who you are. You're a multi-award winning physician with dual board certifications in OB-GYN, which is obstetrics and gynecology for those in the UK, we have different terminology, and integrative medicine. You're the founder and director of the Integrative Medical Group of Irvine, a practice that provides comprehensive healthcare for women by combining the best evidence-based therapies from conventional naturopathic and holistic medicine. You taught obstetrics and gynecology at Keck USC School of Medicine for 12 years as an assistant clinical professor, where you received the highly coveted Outstanding Volunteer Clinical Faculty Award. You now serve as an affiliate faculty member at the fellowship in integrative medicine through the University of Arizona School of Medicine. You are the best-selling author of PCOS SOS and the PCOS SOS Fertility Fast Track, and you've published articles, many articles, in peer reviewed medical journals.

Kirkland Newman:

You're a prolific lecturer and have been featured in several films and documentary series, including The Real Skinny on Fat with Montel Williams and Fasting with Valter Longo, Ph.D. Here is your book, PCOS SOS, which I have to say is fantastic. Even though the title is quite niche, PCOS, which is polycystic ovary syndrome, and many people might not relate to this, but it is a fantastic all-around how to balance your hormones, your mental health, and explains so many wonderful things about how our bodies work, and

how our hormones and our neurotransmitters impact mental health. You cover so much ground that I would recommend this to anyone suffering from PCOS obviously but also people who are just interested about hormones and mental health because it's a really great book.

Kirkland Newman:

One of the things I'm fascinated by is your story because you started out as a conventional ob-gyn, delivering babies and doing all the things that ob-gyns do, and then you gradually moved into integrative and functional medicine and trained as a functional medicine practitioner, and now you do both. I have to say, people in California are very lucky to have you in your clinic because I was reading about your clinic and you offer the most amazing treatments; acupuncture, massage, laser treatments, and of course all the nutritional support, etcetera, as well as conventional obstetrics and gynecology. So, I wish that we had access to that sort of resource here in the UK.

Kirkland Newman:

So, can you tell us a little bit about how you got into integrative mental health and why you felt that that was a necessary move for you?

Dr. Felice Gersh:

Oh, absolutely. Well, I always knew that there was much more to helping women optimise their health than giving them pharmaceuticals and doing procedures on them. So, very early in my career, in my practice, I brought on board what I called my ancillary services. So I brought on board a doctor of oriental medicine. She could do Chinese medicine, acupuncture, herbals and such. I brought in a psychologist, a nutritionist, a biofeedback specialist. So I brought in a whole slew, my massage therapist, and I felt like I needed to add more.

Dr. Felice Gersh:

But until I actually had a little free time on my own, which was when I stopped doing obstetrics after 25 years of chronic sleep deprivation, and I had more sleep, a little bit more time, and I started thinking about what I was really doing for my patients. I realised that my therapeutic toolbox was really limited and there had to be more, because my fallback was well, if you're in the reproductive age group you give birth control pills for everything, and I saw so many side effects, including mental health side effects, which have now been quite prolifically written about that you can actually create anxiety and depression, even increase suicidal ideation in women who are young and put on oral contraceptives.

Dr. Felice Gersh:

As well, I saw what was happening as women were ageing and then went through the menopause, and I saw so much emotional issues, and anxiety, depression, and metabolic issues. I saw them all intertwined, and yet when I researched it I saw almost nothing written about it. It was, well, "this is just what it is". You put women on an SSRI, that seemed to be the go-to. So for women once they hit menopause you just put them on an SSRI, and for women who were younger you just put them on oral contraceptives, and if things got really bad you took out their organs. I mean, that was what was out there, and I said, "This is crazy. Why are we doing this? There has to be so much more".

Dr. Felice Gersh:

So, I started going on my personal journey to find some answers, and I started taking all kinds of courses, with no particular agenda other than trying to learn. So I took courses with chiropractors, and naturopathic doctors, and nutritionists. At one point I ended up in Portland, Oregon and I was taking a course, and there was one MD -- I was the only MD in the audience -- and one of the speakers was an MD. I went up to her and I said, "Dr. Low Dog, you and I are the only MDs in this entire room. Everybody else is a naturopathic doctor and I'm so lost. I just know I have to find ways to help my patients through their journeys in terms of their physical health, mental health" because I saw it was all intertwined. She said, "Well, after talking to you I know you're qualified. In two weeks the fellowship in integrative medicine at the University of Arizona is beginning a new class. Why don't you apply?" So I flew home from Portland that night, I filled out the application, and two weeks later I was in Tucson, Arizona, and I began the two years fellowship in integrative medicine, which I completed now back in 2012, and I have never looked back.

Dr. Felice Gersh:

Now by doing more independent research, taking courses, and developing amazing new relationships with people who are active in the field of functional and integrative medicine, and emotional health, and all of these fields intertwining, I've been able to develop my own network of resources and friendships that have really helped me to go kick it up to the next notch, to really help my patients and understand so much more about how women's bodies and minds work so that I actually feel like I'm making a difference instead of just becoming a pill till the ill doctor, giving out the same old few pharmaceuticals to everyone who walks in the door without really individualising or really making a difference. It was a very painful but also very rewarding journey in the end, trying to figure out how to be a better doctor and be happy in my own skin doing what I'm doing.

Kirkland Newman:

That's amazing. Do you find that you have very tangibly better results with this new approach? I mean, not so new now, but do you find that there's a real sea change and difference with watching your patients actually get better?

Dr. Felice Gersh:

It is so enormous. It is so great and such a profound difference, and it has given me so much joy. I think one of the reasons why, in the US anyway, there's no precise numbers, but they say anywhere between 60 and 80% of medical doctors, physicians, are suffering what they labeled burnout. The reason is because they know they're doing nothing useful. The patients are just coming through the door like a turntable and they just go round and round, and they just issue more drugs, and they really don't do better. I have found that by incorporating lifestyle medicine, every aspect of lifestyle medicine, incorporating different types of fasting, time restricted eating, utilising all forms of mind-body medicine to help my patients to incorporate how to regulate the autonomic nervous system, which doesn't get its due in terms of what that really means when you have a dysregulation of the autonomic nervous system and how that impacts every organ system. But by incorporating all of the different lifestyle medicine techniques and what I call green medicine.

Dr. Felice Gersh:

So green medicine is still medicine. It's not really addressing the root cause, it's really addressing the symptoms, but it's doing so in the safest, most efficacious way by using natural products. Anyone who has watched television or read anything about pharmaceuticals knows that although some can be life saving, I'm integrative, I'm not alternative. So I do still access pharmaceuticals and surgical procedures when they are appropriate, but I see them for what they are and I put them in their place, but when you have a pharmaceutical the array of potential side effects is huge because what they're trying to do, and this has turned out in the long haul to be a false narrative, is that you're trying to alter some basic foundational pathway in the body, but the reality is that there is nothing that is a single tasking enzyme or pathway, everything is replicated throughout the body in various organ systems and the same neurotransmitter, for example, can have varying effects in different organs.

Dr. Felice Gersh:

So if you block or enhance a neurotransmitter you're going to have a whole array of side effects. If you block or enhance an enzyme you're going to have, once again, a whole array of side effects, some of which can be just incredibly terrible, in fact, life threatening and life-altering. So, when you use green medicine you're using something that's found in nature. Now, these can also be toxic, so you have to know what you're doing with them, but they're found in nature. So the body is more adapted to utilising and eliminating them through our natural pathways. So it's much better, for example, to use a phytoestrogen or say a cannabis product that is naturally attune to working with our own endocannabinoid receptors than to use some pharmaceutical that is going to have many, many untoward effects in the body.

Dr. Felice Gersh:

So you're trying to work with green medicine. But also with green medicine, I try to think of it as a bridge to health, not a lifetime commitment to being on an array of herbs either, or natural medicines. But once again, sometimes we need these aids while we're working on the fundamental underlying issues, which is of course the foundation of functional medicine, is looking at the function of the body, saying why is this happening? It's so intellectually rewarding as well because I'm getting to do all of my thinking processes, it's so good because you're like a medical detective and you're looking at okay, what are your environmental toxicant exposures? Do you have say biological toxin exposures like chronic infections and so forth, mould mycotoxins? What's your stress level? What is your sleep like, your nutritional status? What's your gut working like? And so on, so it's really foundationally getting to the essence of how the body works and the link between all the organ systems and recognising how the brain, at the top of the heap, is interlinked with every organ system.

Dr. Felice Gersh:

We started by looking at the gut-brain axis, how the gut interlinks, and now we can add in virtually everything, the gut-brain skin axis, the gut-brain heart axis, you can add in everything because if you did one of those drawings where you do lines to everything, everything interlinks with everything. When you put all this together, the ultimate outcome for my patients is like night and day from what it was before. My patients, for example, many people need to lose weight, and I say, "We're not going to work on weight loss, we're going to work on health restoration." And you'll see as your cells have the tools, the wherewithal to work to actually burn fat, they will burn fat, it will come along. But if you take these false pathways, like starvation, or nutrient deficiency, which is what a lot of these crazy diets are that people go on, they really end up in a state of malnutrition and they do lose weight but they often lose lean body

mass, the critical muscles that you need in order to have proper glucose regulation and homeostasis, and then inevitably they gain it all back, and more so, and more body composition fat instead of lean body mass. So, the bottom line to your incredible question is yes, by doing what I do now the results are like night and day compared to what my practice was previously.

Kirkland Newman:

Well, that's amazing, Felice. I mean, I must say you're an amazing advertisement for this type of medicine. I'm so happy because we're trying to raise awareness about it and spread it over here as well, so that's fantastic. So it's very interesting, I hadn't really thought much about this concept of green medicine, but you have two things. You talk about the root causes, which as you say is how the organs are functioning and how they're functioning in a system, and then green medicine which is sort of the equivalent of pharmaceuticals but they're green pharmaceuticals to help you with the symptoms while you address the root causes.

Kirkland Newman:

If we go to the root causes for a bit, obviously your specialisation is pretty much everything, but in terms of hormones and neurotransmitters, how would you say, for the layperson, that hormones and neurotransmitters are so crucial to our moods? I've heard you speak for instance on estrogen and you're so inspiring, and you come away thinking, "Oh my god, if you have low estrogen then you're basically screwed." But if you can tell us a little bit about the link between our hormones and our mental health, and also the key hormones and neurotransmitters for mental health, both for women but also possibly for men because I know that some of our men listeners might be interested, even though I know that women suffer four times more mental health issues than men, and I've always thought there is probably a hormonal component to that, but would love to hear you on that.

Dr. Felice Gersh:

Well, hormones, to understand what a hormone is, is to understand how important they are. So hormones are the information delivery system of the body. Think of them as the language of the body. So, a hormone can be made in one organ and then delivered throughout the body to other organs. In that respect it's called an endocrine, it's an endocrine system produced hormone. So for example, ovaries make hormones; it makes testosterone, it makes estrogen, progesterone, and then these hormones are put into the bloodstream, and then they circulate, and they have effects elsewhere. But an organ can make the hormone and use it in the organ itself, that's called paracrine. You can even have a hormone made within a cell and that's called intracrine. So, you can actually have these signaling agents and these communicators made in a whole variety of ways. So, in women during the reproductive years estrogen, progesterone, testosterone, and the ovaries make 50% of the testosterone that circulates in the female body. The other half is made by the adrenal gland, but in the reproductive age women all predominantly of the estradiol is made in the ovary and then the progesterone as well. That's where the dominant production occurs, and then it circulates. These hormones are delivering information.

Dr. Felice Gersh:

So if you look at estrogen. Estrogen in the form of estradiol, the form that's made by the ovary, has receptors in essentially every single organ system. I look at estrogen in the form, I'll just call it estrogen but I'm talking about estradiol, it is like the glue that links every function in the body in the female

together to make it one whole and one functional whole. It's what links metabolic functions to reproductive functions, and of course all of that is linked to brain function. So it all links together because nature wanted a healthy woman to be fertile and reproductively successful. You can't have reproductive success in a woman who is metabolically unhealthy, that would mean she can't produce, store, or utilise energy properly, so that would be someone who is extremely underweight or extremely overweight, or has a great deal of inflammation or metabolic dysfunction across all the organ systems.

Dr. Felice Gersh:

So estrogen tries to modulate and keep it all working smoothly and harmoniously. Like I said, that includes the brain and there are receptors everywhere for estrogen. So, in terms of neurotransmitters, for example, in the brain, if we just look at the brain, there are actually neurons called serotonin neurons that make serotonin, that key neurotransmitter that makes us feel calm, and happy, and help us to sleep, because from serotonin comes the sleep hormone, which of course does a million other things, called melatonin. Without having adequate estrogen in the brain, and during the reproductive years most of that estrogen is coming from the ovaries, some of it is also produced locally in the brain, that's important to know, the brain produces estrogen locally, on site. But it loves estradiol, it does not like estrone.

Dr. Felice Gersh:

There's three types of estrogen; estradiol, estrone and estriol, and estradiol is a dominant one made by the ovary, it's the one that the brain loves. Estrone is also converted from estradiol, but the brain doesn't really like it that much and when you are post-menopausal you don't have very much estradiol in your brain compared to during the earlier years, and this has a tremendous impact why after menopause mental health issues really dramatically raise. And in women who've previously, for example, had issues with depression and anxiety after menopause, their brain is really in an estrogen deficient state. They have 400% increased risk of having these mental health problems. Because the male brain makes its estrogen on site, most of it comes from testosterone, that's why males must love estrogen and testosterone because males have loads of estrogen in their body, but all estrogen, this is not well understood, all estrogen comes from androgens. The androgen called testosterone is the precursor to estradiol, the type of estrogen that the brain loves, and that nurtures and keeps those serotonin neurons healthy and vibrant.

Dr. Felice Gersh:

Without enough estradiol in the brain, which will happen in women who don't make enough, like you mentioned like PCOS, we were talking about that earlier, women with PCOS actually live in a state of some degree of estrogen deficiency, estradiol deficiency, and after menopause of course so does every woman. And men, when their testosterone declines with age or because they live in an environment of endocrine disruptors and tremendous inflammation, men who are highly inflamed will end up having testosterone deficiency, and if they have testosterone deficiency they're going to have estradiol deficiency in their brains. That's why men as they age often have changes in the way their brains function because they don't have enough testosterone, and of course there are also testosterone receptors, but without adequate testosterone they're not going to make enough estrogen in their brain. During the reproductive years, women have plenty of estradiol in their brain, but in general men's brains make six to eight times as much estradiol in their brains as do women's brains. That's one of the reasons why women are more prone to having more emotional problems.

Dr. Felice Gersh:

So we have these serotonin neurons and then we have for example the entire immune system of the brain, that includes these specialised macrophages, that's a type of immune cell, called microglia and their cousins called astroglia. These cells are key to maintaining all the functions and health of the brain, including mental health and of course cognitive function. These are totally intertwined, having good brain health in terms of cognitive function and emotional function are totally interrelated, and that's why when people get totally stressed out and emotional they're not thinking straight either. They're not able to really focus and remember things, their memories are going down and they make poor decisions. That's why incredibly emotional stressed out people are tending to make very bad decisions.

Dr. Felice Gersh:

So yes, these are all intertwined, and estrogen, it turns out, there are receptors on these immune cells in the brain, these microglia and the astroglia, also known as astrocytes, there are receptors for estrogen, and estrogen helps to maintain them. I call it immunomodulation. So, they are in different states. The microglia, for example, are like the surveillance system of the brain. So they are naturally just in a quiet state of surveillance normally, they're watching out, they're seeing what's going on, and then if toxins get into the brain, if there is brain damage, like traumatic brain injury, if there is an infectious agent that gets into the brain, then they transform into this crazy state where they become totally active and they run around, and they try to deal with this problem, this trauma, this injury, the damage or the infection. At that point they start secreting these enzymes that are like dissolving enzymes. Now they're designed to dissolve damaged tissue, so that the brain can resorb it and then lay down new healthy tissue. They're designed to damage and destroy the invading pathogen, whether it's a bacteria, a virus, some kind of a parasite, whatever it is, to dissolve it, kill it, and then absorb it and get rid of it.

Dr. Felice Gersh:

The problem is when you don't have proper estrogen levels in the brain, these microglia become like weapons of mass destruction without any control. The immunomodulation sort of surveillance system becomes impaired. These cells, these microglia, they start secreting their enzymes like crazy at the least provocation, the littlest thing, and they start putting out these enzymes and they start destroying natural healthy tissue as well as any damaged tissue. So, basically they become destroyers. They're like landmines that just go off when they shouldn't, and that's what happens with ageing, that can promote more neuroinflammation, which of course is now found to underlie every type of brain problem, is related to neuroinflammation.

Dr. Felice Gersh:

Now, this can be triggered by a lot of other things that come into play, for example, if you have endocrine disruptors, things that will interfere with the proper signaling or receptor function of the estrogen. Of course that can also interfere. So we live in a complex world that can really damage the way our bodies were designed to interface between these hormones and neurotransmitters, and I wanted to mention in terms of cognition, the acetylcholine, which is another very key neurotransmitter, is also controlled, its production is controlled by estrogen in the brain. So that is one of the reasons why women tend to have almost three times the incidence of Alzheimer's disease as males do, because estrogen helps to maintain the production of acetylcholine, which is key for cementing and creating cognition and memory.

Dr. Felice Gersh:

Estrogen is so key and it intertwines with all of these other neurotransmitters and the immune system, which we know is key. Then it gets even more complex because we have this, what should be a functional thing, called a blood-brain barrier, which is designed as part of the vascular system, to keep toxins from entering into the brain. Now, this is a vascular situation, which is also controlled by estrogen, because estrogen has receptors throughout the vascular system, every artery, all the lining cells called the endothelium, are all involved with estrogen. And it turns out that this is key to the production of this gas, which is a potent antioxidant signalling agent and it maintains vasodilation and the health of arteries, and that's called nitric oxide, and it's estrogen in the form of estradiol that is the controller of the enzyme endothelial nitric oxide synthase that produces the nitric oxide, which maintains vascular health and maintains the integrity of the lining so that you don't have leaky arteries, which is the mirror image of leaky gut.

Dr. Felice Gersh:

Without adequate estrogen, or in an environment where you have a lot of endocrine disruptors, or you have nutrient deficiencies, because I have to mention that even if you have estrogen if you don't have the right nutrients like vitamin C by the way is key, and polyphenols, antioxidants are essential, or instead of making nitric oxide you get a disjunction and you end up having what's called uncoupling, and instead of making nitric oxide the system goes down the wrong pathway and you make superoxide, which is a potent toxin, it's like poison.

Dr. Felice Gersh:

So even if you have estrogen, if you don't have the right diet and you don't have the right antioxidants and nutrients you don't actually make the nitric oxide, you actually end up making superoxide, which is poison. So of course it's more than just one thing, that's why we have this whole integrative approach, it's not just one thing. That's why there can never just be a clinic, although they exist, where they just push hormones to people. They just say, "Here, we'll give you testosterone shots, or we'll give you estrogen prescriptions." That is insufficient, it may be necessary, but it's insufficient because hormones, without the wide array of polyphenols, and antioxidants, and all the minerals and having proper alignment with the circadian rhythm, and detoxification functions, and you have lowered the levels of environmental toxicants in the body, all of that comes into play. That's why it's complex, right? It's like making this elaborate recipe. You can't just leave out any ingredient, you're going to end up with a different product, right? That's why everything is important.

Dr. Felice Gersh:

Some things you only need trace amounts, like if you have a recipe and it says you need a pinch of saffron and you leave it out, you can have a different dish. Sometimes you need trace minerals, it could just be a little bit, you just need a little bit of lithium, you just need a little bit of manganese, but if you leave it out nothing is going to work properly. Without basic hormones I can tell you none of your neurotransmitters are going to work right and that is like you're making a cake and you don't have the flour. I mean, that's as fundamental as you can get. It's not just a little spice. I mean, that is foundational to the body's functioning properly, is having the right types of hormones in the right amounts, and also at the right times. That's where the beautiful rhythms come in.

Kirkland Newman:

Well, that's so fascinating, and also it begs so many questions because you think okay, well, these hormones are really important and you've talked about estrogen, and you've talked about the sort of cofactors, nutritional cofactors and the blood-brain barrier and nitric oxide, which are all very important, and endocrine disruptors. Obviously there are all these other hormones as well that have huge impacts on our mental health.

Dr. Felice Gersh:

Oh yeah.

Kirkland Newman:

You have progesterone, and insulin, and cortisol, and these are all fundamental. So, it's like an orchestra.

Dr. Felice Gersh:

It is.

Kirkland Newman:

Estrogen is obviously key, and you've given us a brilliant overview of that. What are the other key hormones that you would mention, and what's their impact on mental health? I mean, you mentioned that estrogen was linked to serotonin and also the glymphatic system, the immune system of the brain. What are the other key hormones for mental health and the brain?

Dr. Felice Gersh:

Oh my gosh. Well, there are so many that are important. That we know for example that thyroid hormone is critically important and they all interlink. For example, if you have an estrogen deficiency state, the thyroid hormone receptors are going to malfunction. That's where the incredible intertwining of everything, that's why you have to look at all the different pieces of this puzzle. It's like everything has to fit together, but we know that there's been some data collected that if you have a deficiency of T3, which is the active form of thyroid, that you will almost invariably have a state of depression to some degree, and in fact there's some research that even in people who look like their TSH is normal, which is what a lot of the conventional doctors measure, and that's sometimes all they measure, is TSH, which stands for thyroid stimulating hormone, which is a pituitary hormone, which is put out according to the signals given to it from the brain, and then that hormone goes to the thyroid, it circulates, ends up at the thyroid, and remember this is hormones are information delivery systems, it tells the thyroid okay, make more T4. So T4 is more like the storage form.

Dr. Felice Gersh:

So, the way I think of it is like if you live in a world where everything is cash, it's a cash society, but you have ATM machines but that's it. So you can have a ton of money in the bank, that would be T4, so that's the storage form. But then when you want to get some food, you're hungry, you have to go into the store, it's a cash world, and you go and you can't say, "You know what? I have a lot of money in my bank account, can I please have all of this food?" The store will say, "Well, I'm glad you have all that money in your bank account but we take cash, okay? So there is an ATM machine out there, go get some cash." So

you go to the ATM machine and it's broken, you go to another one and it's broken, it's broken. So it doesn't matter how much storage you have of T4 if you can't convert it to T3, which is like your cash in hand, then it's useless, it's really useless. For different reasons now we're finding some people they don't properly convert. It could be an autoimmune thing or other things that we don't even fully understand yet, but they can have an adequate amount of T4 but they don't actually have an adequate amount of T3, and T3 is the functional form and the brain needs it to function properly.

Dr. Felice Gersh:

So, sometimes giving a small amount of T3 or a different form of thyroid that includes, like a desiccated thyroid that includes some T3, you can actually change the paradigm of how people are functioning and they can feel so much better. In terms of other hormones, now this is sort of a borderline between a hormone and a peptide, and sometimes these can be confusing. So hormones are made out of amino acids, that's like the building block for proteins. So they're proteins, and peptides are just smaller. They have fewer numbers of the amino acids in the chain. So sometimes it's like a variant. Is this a peptide or is this a hormone? And we know that there are just enormous numbers of peptides and they come and go in very short fashion, very short timeframes, and they can be doing different things all over the body. But one of the sort of peptide/hormones that I've been looking into more recently is oxytocin.

Dr. Felice Gersh:

So oxytocin is, in women, because I take care of mostly women, is known as the love and bonding hormone, and it's what comes out when women have their new babies, and they have all this oxytocin that's surging in them, and the baby looks at them, and they look at the baby, and it's just love, and they bond. So it's the loving bonding hormone. And for a variety of reasons people may not be making enough. It could be partially aging, endocrine disruptors. We know that you need to have adequate estrogen in the brain to make adequate oxytocin. It also links to appetite. So we know that oxytocin helps in the brain to control appetite, and people who have dysregulated appetite, like women who have binge eating disorder, which is very prevalent, they often have dysregulation of oxytocin. Oxytocin interestingly enough is also very key to having proper orgasmic response. So now we actually can supplement with oxytocin through compounding pharmacies and I'm having some really amazing results in terms of women who are just feeling disconnected. It's like I just, I don't feel like I love anyone anymore. What's happening? I feel like all I want to do is yell at my family. They've lost that ability to bond and love, and this can help.

Dr. Felice Gersh:

So, one of the things that can help with getting oxytocin back online is avoiding crazy eating times, because oxytocin, like so many hormones, is very circadian. So you want to definitely try to eat at regular hours and get enough sleep, and get exercise, and sometimes even take a supplementary dose of oxytocin. If someone feels like I'm feeling disconnected, I don't know why I don't feel like I love my kids anymore, I don't feel that anymore, and of course this is a problem in women when they have babies and they're not bonding to the babies.

Dr. Felice Gersh:

When the babies are taken away from them at birth, or they're not able to breastfeed and they're not holding their baby because they have a medical complication. This became a very big deal in the early

stages of the COVID pandemic, when women would have babies, they were saying okay, the mom is positive for COVID so we're going to take the baby away, and they would separate the babies from the moms for, could be, two weeks. That is so terrible because you need this oxytocin and the bonding, and that sometimes cannot be fixed.

Dr. Felice Gersh:

So it's amazing how our hormones are so critical to these emotions and so forth. And then people who are chronically stressed, they have very dysregulated cortisol, and cortisol we know is very, very important for emotional health. It's everywhere. Cortisol, a lot of people say we don't like cortisol, but cortisol is the only hormone in the entire body that if you don't have any you will be dead in less than 24 hours. Cortisol is essential to life. It's one of the earliest steroid hormones that existed in any creature on this planet. It's so critical to health. It's very, very circadian. It should go very high in the morning to help wake us up, get fat burning going by increasing our appetite, and mobilises fats and does all these amazing things, but it should then go down at night, and that's when our melatonin another really critical hormone that I've just been learning more and more about, melatonin has so many functions in the body, but our melatonin then starts to rise as the cortisol goes down.

Dr. Felice Gersh:

When people are chronically stressed they have complete dysregulation of the adrenal functions and that's including the production of cortisol, and that will change the brain. It will also create impaired gut barrier, it will create impaired blood brain barrier, all the barriers of the body start to break down. You start getting tremendous levels of systemic inflammation, neuroinflammation, and chronic high stress, and the body cannot properly repair itself when you have chronic high levels of cortisol. So you'll be in a state of chronic disrepair, catabolic states where you're breaking your body down, breaking down bone, lean body mass, and you'll have tremendous amounts of neuroinflammation because you're upregulating all of that inflammatory response, which is designed for saving us, to keep us from being killed by bacteria, or trauma, but it's never designed for chronic upregulation.

Dr. Felice Gersh:

So, there's tremendous problems when you have chronic stress, and stress can be so many things. It's not just well, I hate my job, or my husband is mean, it can be nutrient deficiencies, it can be toxin exposures, it can be sleep deprivation. So stress comes in a million forms, the body has only one stress response to all of the factors that can increase stress, and then it becomes sort of a domino effect, it just spirals out of control. So, cortisol is, I can't emphasize enough, how key cortisol is to every aspect of brain function. We could go on and on down the line. There's every peptide and every hormone has an impact on the brain, and they all intertwine together. Progesterone is a neuroprotective hormone. Progesterone helps to make GABA, the hormone, that neurotransmitter that enables proper sleep and relaxation. Without adequate progesterone you're in big trouble.

Dr. Felice Gersh:

Progesterone is known as a neuroprotective hormone, and the balance, and this is another discussion for another day because it goes on so long, but the intertwining between the endocannabinoid system, which is a lipid signaling system. So I mentioned that hormones and peptides are made out of amino acids, they're proteins, and then we have this incredible parallel system of lipids, fatty acids that are also

about signaling and immune system regulation, and they work together, and they intertwine, and estrogen and progesterone are in this beautiful rhythm with the endocannabinoids. We have the key ones that were first discovered, the 2-AG and the anandamide, and now we have, I call them endocannabinoids and friends because it's a whole host of fatty acids that are involved with the basic endocannabinoid, and that's why in the gut they're calling it now the endocannabidome, because it includes the microbiome. There's the endocannabidome, this incredible array of fatty acid signaling agents that are masterminding everything along with the peptides and the hormones. It's all incredibly intertwined, and estrogen and progesterone have this beautiful rhythm with the endocannabinoids, and estrogen upregulates the production of anandamide, which works on many of the receptors in the brain, which is involved in anxiolytic, reducing anxiety and so forth, and then when you have high levels of anandamide it downregulates the production of estrogen.

Dr. Felice Gersh:

So there is this beautiful feedback, feedforward mechanism, and progesterone downregulates the production. I had mentioned estrogen upregulates the production, and these are key players in reproductive success. But like I mentioned, all of these, every system in the body, is replicating throughout the body; all of the enzymes, all of the hormones, all the peptides, all of the endocannabinoids, the lipid signaling agents, the other types that come from omega-3, the endocannabinoids come from omega-6. And then we have all of the lipid signaling agents from omega-3 that are now often called the resolvents and the protectants. There's another whole group, the specific pro-resolving mediators that help to promote inflammation resolution, and you need this incredible balance, but they all interrelate with the hormone systems.

Dr. Felice Gersh:

So you can see how if you have deficiencies in certain foods, like if you're not eating healthy types of omega-6 fatty acids, or you have imbalances, you're not consuming enough of the essential fatty acids that are the omega-3s, then you're going to have these imbalances as well in these critical lipid signaling pathways that are so involved in the brain as well. We know there are receptors on all the immune cells for all of these types of lipid signaling agents. So, it's so complex and it all intertwines, that's why we need every bit of this to work together, and this is where the conventional medical world just doesn't even get into it at all. I mean, it's like they don't even deal with this, they don't even know about it, they're not talking about it. It's really shocking that doctors are coming out, and I talk to newly minted doctors just coming out of medical school and they're not being taught any of this. It's shocking.

Dr. Felice Gersh:

It's so shocking. But I have an exciting thing to mention that I'm working on a pilot study now that's going to hopefully get launched in 2021 to help train internal medicine residents in the whole underlying philosophy and foundation of neuroplasticity and how you can use lifestyle. I'm going to be doing the nutrition lectures for it. You think that they would know something, they already finished medical school and now they're in residency, but they don't understand the whole neuroplasticity, how the brain can create new connectivity, new synapses, and how you can actually help the brain to heal and recover from emotional traumas and physical traumas so that people can lead better lives. They're not being taught this, but now hopefully starting in 2021 we're launching a pilot program to introduce just the concept and the foundation of this information to people who are going to be going out and hopefully taking care of people in better ways. So there's a little light at the end of the tunnel, but it's really a

shame that big pharma has taken over so much of the medical education and therefore has dictated what they learn and what they don't learn, and we, doctors who have a little bit more interest in making a difference and really thinking out of the box have to go and look at the basic science research.

Dr. Felice Gersh:

So, everything that we talk about here is founded in evidence-based scientific research. So we have PhDs all over the world and research MDs who are doing incredible research often beginning of course with animals and they're learning the foundations of life, because so many of these systems are replicated throughout the animal kingdom so we know what happens. I know it seems odd, but what happens in mice and rats actually happens in humans. Of course, we have to modify some of these things, but there is so much replication, that's how we can learn. So the PhDs and the research scientists are doing this incredible work but it's not being incorporated into clinical practice, and this is really criminal in my belief. Sometimes they say it takes almost 20 years from when something becomes scientifically discovered until it's implemented in clinical practice, and that's ridiculous. Who can wait 20 years? So we're trying to speed up this process a bit.

Kirkland Newman:

Which is fantastic, because that is the problem. I mean, since the 1980s there have been something like 50 or 60,000 papers on PubMed on the gut-brain connection, but when you go and see a psychiatrist nobody is saying, "Hey, have a stool test." So until that happens my feeling is we won't have made that much progress and actually in conventional medicine, which is why this is so important.

Kirkland Newman:

I think that brings me to the key things that disrupt this intricate balance, and as you've so thoroughly pointed out, all the different hormones, and neurotransmitters, and systems, and how they work together. There is one that I wanted to mention also, which we haven't mentioned, which is insulin, which I think is very important. Maybe you can touch on that, but in terms of what are the things that are disruptive, and you mentioned a few. You mentioned poor nutrition, and toxins, etcetera, but what would you say are the top factors that disrupt this intricate hormone balance, which will then point us towards solutions of what we can actually do to restore this balance?

Dr. Felice Gersh:

Well, that's the perfect leading actually to insulin, because many of these lifestyle choices interrelate with insulin. So in terms of just touching on insulin, so insulin is also essential to life, type 1 diabetics don't make insulin because of an autoimmune problem which destroys their beta cells, which make insulin and they don't make it and they will die because you need insulin, that's why it was a wonderful breakthrough when they discovered how to first get insulin from other animals to use in humans and then ultimately manufacture human identical insulin, that has been lifesaving and life transforming for type 1 diabetics.

Dr. Felice Gersh:

So we know insulin is essential for life, but like so many things, too much of a good thing and you're in trouble. So, we live in a world now where so many people have far too much insulin at any particular time, at every time. So, insulin should be finely regulated and it's made by the pancreas but a great deal

of it is controlled by the liver. Okay, so what happens when you have the wrong microbial population in the gut, we call it gut dysbiosis, which is now pretty much epidemic because of not eating the right foods, and eating the wrong foods, and eating foods at the wrong times. So you end up having the wrong microbial population and therefore you don't have the right beautiful mucus protective coating that keeps the lining cells called the enterocytes to keep them safe and protected from toxins that could be in the intestinal tract, and then you have the wrong microbes that make these toxic byproducts called lipopolysaccharides, also known as endotoxins, toxins from within.

Dr. Felice Gersh:

So, what happens when you have this situation, which is now epidemic, these toxins and these products actually get through the gut lining, we call that leaky gut, impaired gut barrier, and the immune system surrounds the gut, which we call the GALT, gut-associated lymphoid tissue, and these cells start exploding with their inflammatory products called inflammatory cytokines, which then circulate throughout the body, including crossing into and damaging the blood-brain barrier and causing the neuroinflammation that we touched on. As well when you develop this state of chronic low grade inflammation, that produces insulin resistance. So it makes it so that the insulin that you make doesn't work properly, it alters its functionality. So the glucose that you have, and glucose is not evil, glucose is the primary energy source for cells of the body, but of course we have the backup system called fat, right? The fatty acids and the body should be able to seamlessly go between the two to create energy sources for the cells and particularly for the brain.

Dr. Felice Gersh:

But what happens when you have this chronic state of inflammation is you develop insulin resistance and the blood sugar that normally should be finely regulated and not go up too high. It goes up a little bit after you eat but it shouldn't go up too high and then come right down again, it goes up too high and then the body, because the insulin isn't working well, and then the pancreas, at least for a while, eventually it burns out too, but in the initial stages for years it produces more and more insulin. Now, insulin has as one of its primary functions is to cause the production and storage of fat.

Dr. Felice Gersh:

So now you're making fat and it's dysregulated because of the inflammation, so you're producing that unwanted belly fat, that visceral fat that's around the internal organs, and then the immune cells, the macrophages and neutrophils they actually flock and then embed into this fat and they become the fat itself, which is an endocrine organ. Talk about hormones, it makes hormones, a whole slew of them, like leptin, and adiponectin. Leptin for example, is one of the key hormones that regulates appetite, it does other things too. Everything does multiple things, but then you have a dysregulation and you get what's called leptin resistance. So then it doesn't regulate the appetite properly and you have a totally dysregulated appetite, and that creates all kinds of eating disorders like night eating and crazy bingeing and so forth.

Dr. Felice Gersh:

So, you end up with too much insulin, too much fat, too much visceral fat and a lot of inflammation. When you have this dysregulated gut it connects to the liver. There's a total interconnectivity between the gut and the liver, in fact, the portal vein is connected that goes right to the liver, you have the

enterohepatic circulation, the circulation between the gut and then liver, and also when you have the right gut bacteria and you eat the right foods you make these metabolic byproducts called short-chain fatty acids, that also act as signaling agents to the liver and also on the vagus nerve, which regulates the autonomic nervous system, which is what also creates anxiety when you don't have enough of your parasympathetic.

Dr. Felice Gersh:

So you can see it gets very complicated, and this all interlinks with insulin. Okay, because insulin just keeps promoting more and more fat and inflammatory fat, and that creates this whole dysregulation of the autonomic nervous system and of the liver, and now you have the liver that's becoming all inflamed. An inflamed liver becomes dysregulated and the liver makes glucose. So now you have, like insult to injury, you have someone who has insulin resistance, so the insulin isn't working well, you have blood sugar levels that are rising, and now you have the liver that's dysregulated that can make glucose from the storage form of glucose called glycogen. So now you have the liver spewing out glucose because it has uncontrolled gluconeogenesis, it produces glucose totally that the body doesn't need, and it's spewing out sugar. So now your glucose levels are going higher, then your insulin levels are going higher, and then on top of that the liver starts producing a lot of fat, triglycerides and high cholesterol. That's why when people have high triglycerides and high cholesterol it's not just let's suppress the levels, you've got to look at what else is going on. I mean, this is like a big picture of all kinds of stuff that's going on, that's like the tip of the iceberg.

Dr. Felice Gersh:

Then what happens is you get what's called fatty liver, which is really an epidemic, non-alcoholic fatty liver disease. Now, fatty livers are dysregulated. The liver is the metabolic powerhouse of the body. It detoxified everything, so now your liver can't detoxify properly. Now you're going to bioaccumulate more of those toxins. You could see how this keeps escalating and escalating, and we know that when you have this glucose dysregulation, homeostasis is off, you also end up having malfunction of what are called the glucose transport system, the GLUT system. That's what transports glucose into the brain, and the brain loves glucose, it's its primary energy source.

Dr. Felice Gersh:

So now you have a brain that ends up being deficient in energy. Well, that's a very sad brain, I can tell you. This brain is not doing well, it's not feeling well either cognitively or emotionally and all of this links to insulin. Then as well, remember, insulin is all about fat storage, so people have very high levels of insulin, they can't burn fat very well. That's a different skillset. So they're very good at making fat, very bad at burning fat, and their mitochondria, which are the fat-burning energy sources, they're malfunctioning because of all this inflammation, they're being damaged as well.

Dr. Felice Gersh:

So, you have a person who doesn't make energy for their brain at all. They can't transport glucose. They're living in a sea of energy and they can't get it into their brain. They have all this fat they can't utilize, they have all this glucose circulating they can't utilize. So that's why they're now calling diabetes, sometimes they're calling it type four or type three, I'm trying to remember which number, but anyways,

it's a form of dementia because when you have diabetes you have all of these things in play where you have all this fat, all this sugar, all this energy that you can't consume.

Dr. Felice Gersh:

So I think of it as you're in a raft in the middle of the ocean and you're dying of thirst, and you have all this water but because it's all salty you can't use it. So here you're in this body that's full of stored energy and energy everywhere and you can't use it in your brain. So needless to say, this is the ticket to both cognitive and emotional decline.

Dr. Felice Gersh:

So yeah, definitely, all of these things are highly intertwined. So the way around this is to start eating the right foods. You have to nurture your gut microbiome. This is so critical. You have to heal your liver. There was just a paper just published I was reading this morning that looked at vegan. Now, I'm not for a long-term vegan because you can modify this and just have a little bit of animal if you like, but they found when you eat high amounts, and the data is coming out that if you really want to transform the body that's already in trouble you have to eat like nine, 10 cups of vegetables and fruits a day with more of it being vegetables than fruit. That's a lot, granted, but that's because this body is desperate for nurturing the gut microbiome with polyphenols, antioxidants, and fiber, and the brain is desperate for these nutrients and so forth.

Dr. Felice Gersh:

So definitely for people to turn things around you need to eat tremendous amount of fiber, you need to eat tremendous amounts of plant-based polyphenols and antioxidants, and the proteins that come from plants are the best utilised for growing and sustaining the musculoskeletal system but people don't realise.

Kirkland Newman:

Really?

Dr. Felice Gersh:

Yeah, the data said plant-based proteins are better for female bones than animal proteins.

Kirkland Newman:

Really?

Dr. Felice Gersh:

Yeah.

Kirkland Newman:

Yeah, there's so much controversy over this vegan for mental health, and vegan proteins not being sort of up to par.

Dr. Felice Gersh:

Oh, you have to get B12 in there, make sure.

Kirkland Newman:

Yeah, B12.

Dr. Felice Gersh:

And this is for turnarounds. I mean, long-term, I don't think you have to eat quite to that volume or that you have to be a vegan, but for doing a turnaround you have to be really extreme, because this is like, talk about zone red here. This is like SOS, you really massively you got to turn things around. So, you got to nurture that gut microbiome and recognise that the microbes also have their circadian rhythm. So the most insulin sensitive time of the day is the morning. So you try to get people to eat a big breakfast and what they call time restricted eating so you don't snack because you can't get your insulin level down if you keep eating. This is where fat comes into play.

Dr. Felice Gersh:

So I am definitely in favor of eating significant amounts of fat but they should be the type of fat that are predominantly the fatty acids that come from plant-based sources and a little bit of saturated fat, but not too much. They've shown high levels of saturated fat do cause leaky gut, so you don't need a lot, but you need a little bit. In fact, there are studies that show that if you go on a completely saturated fat free diet you'll have much more depression. So everything is there for a purpose. It's all about the right balance of everything. So you really want to ... Also, oh my gosh, sleep is so important.

Dr. Felice Gersh:

So you've got to do everything you can to get people to sleep and get that melatonin. During the night is around two o'clock in the morning, at the same time you get that melatonin surge is when you get the big blood flow surge to the brain that helps clear it out, and we know that like you mentioned, the brain has its own lymphatic system for clearing things, but nothing works properly if you don't get adequate sleep. So you've got to look at every lifestyle thing.

Dr. Felice Gersh:

Then sedentary lifestyle is very promotional to high insulin resistance and problems with metabolic health. So fitness is amazing. We know for mental health that exercise works better than SSRIs, and that's been shown in studies, and we know that it does increase what we call endorphins, which is our natural opioid system, which is so key to immune function and mental health, and sunlight is medicine. So, sunlight. We actually have receptors in our eyes that take in the sunlight, and from the sunlight we produce serotonin, it triggers it not directly, but it triggers the neurons that connect to the serotonin neurons that cause them to produce more serotonin. So, sunlight makes us happy, that's why they do light therapy. I use a lot of light boxes and I'm in California where the sun is out a lot, but nevertheless a lot of people live indoors, they never get out. They're all shut in nowadays too. So light boxes can be very beneficial, but sunlight is medicine for mental health and physical health.

Dr. Felice Gersh:

So there's so much that we need to incorporate to help people who are already unhealthy, and that is a very significant population. For people that are healthy and they want to maintain it, they just have to stay true to the cause and maintain all these healthy lifestyle habits, because you can't be lax. You just have to be always vigilant about staying on track to stay the course with all these healthy lifestyle choices.

Kirkland Newman:

I know, and you're so right. I mean, that's one of the challenges of integrative medicine, is it takes a lot of work I often find. You have to be very disciplined about your routine, and about your meals, and about when you go to sleep. You give so many great practical tips in your book, and you say for instance you really should go to bed between 10:00 and 11:00 for your circadian rhythms and get up at the same time every morning between 6:00 and 7:00, and you talk about exercise and gut microbiome and how exercise is actually one of the best things for the gut microbiome, which I find fascinating. You talk a lot about the gut microbiome and exercise, and essentially you give a lot of advice also on supplements. You mention inositol, berberine, quercetin, NAA, B complex, omega-3s, etcetera, and then you talk a lot about circadian rhythm restoration, and I think that's really key and it's something that we don't hear about a lot.

Kirkland Newman:

So, if you can take us through how you establish circadian rhythm restoration, why it's so important. Then gut health, what are your key things for gut health? Then inflammation, how do we reduce inflammation? What are your top tips essentially for reestablishing harmony in this whole sort of symphony that we're trying to manage daily for our health?

Dr. Felice Gersh:

Well, let's give a few really easy takeaways. So, number one is eat breakfast, okay? So that's the meal that most people skip and that's, like I mentioned, the time when you're most actually attuned not just with insulin sensitivity, meaning that your blood sugar will rise the least when you eat the food in the morning. So we always say, I think I put it in my book, if you have to have dessert, have it with breakfast.

Kirkland Newman:

I love that.

Dr. Felice Gersh:

Because your blood sugar will have the smallest rise at that point, and so your insulin levels will also rise the least. So try to have as much of your food, and think of food for breakfast as any kind of food, like dinner for breakfast. Don't think of conventional breakfast foods. Any food will go.

Kirkland Newman:

I love that too.

Dr. Felice Gersh:

So just start with that, and then the other thing is stop snacking because you've got to get that insulin down, and insulin and blood sugar have to stay nice and level. If you keep eating that isn't going to happen, and the gut microbes, this all interlinks, they don't know what time it is except by when you feed them. So you want to get them on a schedule. Think of them as a pet that you want to have on a regular schedule. They're your best buds, you love your microbes, you got to feed and nurture them. So feed them at the same time every day and stop snacking because they get very confused. They don't know what time it is, and different microbes function differently at different times of the day. They found that at night when you're sleeping a whole different array of microbes become activated and then swarm like insects around in the presence of melatonin and produce a whole different array of metabolites, short chain fatty acids, at night.

Dr. Felice Gersh:

So everything is day and night, and you got to just say I'm two different creatures, a day creature and a night creature. My microbes are different in the day and the night. My immune system is very different. Your natural killer cells are completely different in the day and the night, everything is different. Your immune system is regulated differently. They're now doing research on for example if somebody is going to have a therapeutic of any sort at different times of the day, they call it chronotherapeutics, giving therapies, doing surgery at different times of the day can have different outcomes because our immune systems are different, our bodies heal differently at different times. So everything is on a timer. So recognising that this is built into our genes, it's not changeable, you can't change it on a whim, so eat breakfast and then don't eat more than three times a day, and try to eat an early, early dinner and stop snacking. That alone will change the paradigm of your health.

Dr. Felice Gersh:

The next thing is, as you mentioned, going to bed and trying to get into the rhythm of sleep. To keep people getting adequate melatonin you have to have the room very dark. I always sleep with a sleep mask because my room has just too much ambient light, and I don't have blackout shades because I don't like waking up in the morning to a black room. I mean, that's the problem, you got to make your trade-offs here. So I have the morning sun come into my bedroom, but I have a sleep mask, and I just naturally wake up. I can just feel when it's 6:30. I don't know how this happens to us, we're on timers. So I just naturally wake up, and what I do is I take off my sleep mask, I don't know what time it is but I just know it's about 6:30, and I take it off and I can feel the little bit of light just kind of coming through my eyelids, and then I just let it stay that way for quite a while, like maybe 10 minutes, 15 minutes, depending on what I have to do, and then I open my eyes. That's more like a dawn simulator of sorts. It's naturally letting the light come in from the dark, that type of a thing.

Dr. Felice Gersh:

So you really want to sleep in a very dark and cool room. Our temperature changes at night, it goes down. Our pulse goes slower, our blood pressure goes down. In fact, people whose blood pressure doesn't go down at night, they are at much greater risk for getting a stroke or a heart attack. We call them non-dippers because what happens in the morning is that's when we have our greatest rise in blood pressure. That's why strokes are more common in the early morning hours as the melatonin is dropping and the cortisol is rising. You have this dramatic increase in blood pressure, and if your blood pressure is never really dropped it can go and do a way overshoot and that can create a stroke.

Dr. Felice Gersh:

So we definitely want to make sure that people get their blood pressure down at night, and of course that can be monitored and people, they have now 24-hour blood pressure monitors and all kinds of things to check, and sleep apnea is another epidemic. That also can be related to neuroinflammation as well as obesity, but it doesn't have to be just obesity.

Dr. Felice Gersh:

I mean, women can be very thin and have sleep apnea. People don't realise that because it's really disruption of the sleep centers in the hypothalamus of the brain due to neuroinflammation. Then you have dysregulated breathing during the night and you wake up and you don't even know it though. Women are very different with their sleep apnea than men. They don't usually wake up or stop breathing, they just have these tiny little interruptions that disrupt their sleep phases so that they don't get restorative sleep, they don't have the proper REM sleep and slow-wave sleep and so on. So, I do a lot of sleep studies because it's one of those things, and a lot of people don't realise this, you can resolve sleep apnea when you start reducing the inflammation in the body and you get the gut back on track and you heal your gut microbiome and your gut integrity and so forth. You can actually heal sleep apnea, so it's not like once you have it it's for life, it doesn't have to be.

Dr. Felice Gersh:

The other thing that's really helpful is if you take a brisk walk after meals, it's been found that just doing that will help lower your blood sugar and then therefore your insulin level. The other thing is, and this is how I would really want to make sure that this gets in, is to have fun. We live in a world where people don't have the proper relationships, they don't have enough love, feel loved, and just have fun. When you're a kid, at least when I was a kid, my mom would say, "Go out and play." And I had a lot of unstructured fun time and play time. We live these structured very restrictive lives. You can tremendously improve your mental health, your gut health, your overall metabolic health if you have less stress and you have more fun in your life.

Dr. Felice Gersh:

So make sure you always leave time for fun, for relationships, because ultimately we are humans. We are very interconnected people with other people, that's why it's so critical to nurture relationships and to find things that are fun. When they looked at what form of exercise actually is most associated with longevity they found that it was tennis and badminton, and because you cannot play tennis or badminton by yourself. They found that any of the sports that involve teams and other people were much more associated with longevity than solo sports. And the least of all the successful sports was going to the gym by yourself. So just working out by yourself had the lowest association with longevity. So, what really means it's having fun and being with other people is really a critical component of being a healthy long lived person. So it's really so important. Find people you identify with that you relate to and go have some fun.

Kirkland Newman:

I think that's so smart, and the social engagement system is so important in the polyvagal theory because it's all about the effect of social engagement of the vagus nerve and how important that is to regulate our autonomic nervous system. Stephen Porges' pioneering work in this area is such a big

advocate of social engagement and how it really regulates our autonomic nervous system and our ventral vagal engagement, which is super key for sort of our parasympathetic system and calming us down.

Kirkland Newman:

So, I think that's a really good point. I mean, the fun, the circadian rhythm is important, the exercise is important. Are there any other things that you would say are essential for hormone balance that we haven't mentioned? I mean, we've covered a lot. It's interesting here because I made a note that each of our 13 trillion bacteria has its own clock genes in our guts, and I found that a fascinating fact. But is there anything else, I mean, eating fiber, eating a lot of fruit and vegetables, or mainly vegetables and fruit, restoring our circadian rhythms, taking these supplements that you were talking about, which I think are very interesting as well, and you mentioned curcumin, vitamin D, B, omega-3, ashwagandha. Are there any other things? Cleaning up our environment. I don't know if we've spoken enough about sort of the toxins and the effect of toxins and endocrine disruptors.

Dr. Felice Gersh:

Our environments now are just really overflowing with environmental toxicants. I found that some of the people when we test, and we can do some of the genetic testing, and that some of the people who have some of the worst expressions of PCOS, for example, have some of these genetic variance that show that they are not very good at detoxifying. Now, I just always like to emphasise it. These variants often have other benefits that we don't always know, but in our world that is filled with exogenous toxicants it's really a challenge. Now, these probably are adequate for our own body produced toxins, it's just that when we get overloaded. The way that we look at it in the environmental medicine world is that we're all born with a waste bucket, okay? And they come in different sizes. So, some people have a giant waste bucket and other people have little ones, but when they fill up with these toxins and toxicants they overflow. That's when we manifest with disease because we just are no longer contained.

Dr. Felice Gersh:

These include so many things: all of the plastics that are out there, the phthalates, BPA, BPS, BP everything now, they keep making variants and they're all toxic. Basically there's no safe plastic, that's a good takeaway. If it's plastic, you want to avoid it. I don't care what BPA is on it, okay? It's not good for you. Then we have flame retardants, stick retardants, heavy metals, of course, and then there's the PCBs that have been outlawed and many of the pesticides, they don't even exist anymore, but they're still there because they never degrade, they're persistent organic pollutants, they never go away. Sometimes they call them the forever chemicals. That's really very mind-boggling that the pollution of 30, 50 years ago is never going to go away for our ancestors for thousands of years. So these are just ubiquitous, that means that they're everywhere and everyone has them in us.

Dr. Felice Gersh:

Now, years ago. I mean, we're talking like maybe 20 years ago they had a study on newborn babies where they tested their umbilical cords and they found over 200 toxins in their umbilical cords that don't belong there, and this is like 20 years ago. You can just imagine because there's well over 80,000, maybe it's 100,000 by now chemicals that have really no safety testing that are just spewn into our environment. So, the scale of harm that these create is really immeasurable. It's so huge on the body. So,

we have to do everything we can to try to reduce our exposures and to improve our body's capabilities to eliminate them.

Dr. Felice Gersh:

So reducing exposure means try as hard as you can to buy organic foods. Pesticides, herbicides, weird chemicals, scents, flavors and all these things, emulsifiers, stabilizers, none of them belong in the human body. We know artificial sweeteners do as much harm as overloading on sugar in terms of predisposing to diabetes. So, please if it's not made by nature, don't eat it, okay? That's why I say organic farm to table, skip the middleman for just about everything. Maybe if you get a glass jar of organic stewed tomatoes, that's the only ingredient, something like that. That's about it. Everything else, try to go from scratch, old fashioned farm to table.

Dr. Felice Gersh:

Then try to avoid plastic, try to use glass, stainless steel, and if you have to use plastic for storage make sure the food is cold before you put it in it and never microwave in plastic. They sell things that you can just put in your microwave, please don't do that, all of that is coming out. Then takeout food, when it comes and it's all lined by these really bad chemicals and styrofoam, oh my gosh, that never degrades. So make choices, like if you go to a takeout restaurant, bring your own containers and just say, "Please, put it in this." I know that seems crazy, but that's what you need to do. When food is hot it transfers the chemicals into it that much more readily.

Dr. Felice Gersh:

So, make the best choices you can. It just pains me when I think of the different toys and things I gave my kids, like they were chewing on plastic. Who knew in those days? And then they put BPA in baby bottles and then you would give it to them. So make the choices that you can to lower toxin exposures. Don't spray your house with pesticides, try to use natural pest control methods. As much as I don't like ants and spiders, as long as they're not recluse spiders and such, the spiders control the ants. Remember ladybugs help to control insects. Try to use natural means. There's organic gardening and farming and then there's agribusiness chemicals. Try not to support the agribusiness chemical industry. They're not there to help you, I can assure you. So let's go with organic. So, as much as you can, use natural products in your home. If you can try not to have vinyl everything, try to use ceramic or real wood and so forth.

Dr. Felice Gersh:

Then to upregulate your detoxification pathways there are some of these supplements that you mentioned, curcumin, and acetylcysteine, milk thistle, all of the antioxidants. So they're wonderful, you need to help your liver. A fatty liver, we talked about that, is not going to detoxify well. So everything you can do to help your liver to be the healthiest it can be. I love far infrared saunas, sweating. So, you detoxify through your skin if you sweat, you can sweat it out. Also by urinating, so make sure you hydrate well, and green tea, all the herbal teas are great. I keep trying to love green tea more, and I don't, but for people who do, it's fantastic, but here's a tip. If you're like me and you think green tea tastes a little bit too much like dirt you can try oolong tea. Now, oolong tea is almost as beneficial as green tea and it has a totally different flavor, which I find delicious. So, we always have alternatives, right? We never want you to eat or drink things you don't like, there's always an alternative. So oolong tea for those of you who don't love green tea, and that works just as well.

Kirkland Newman:

Or green tea. Yeah, green tea supplements I guess, yeah.

Dr. Felice Gersh:

Oh yeah, right. But oh, with green tea supplements make sure you don't take too much, and also make sure you take it with food. There have been some cases reported of liver damage from overdosing on too much green tea supplement. Remember we talked about everything in the right amount. So green tea is great, but I never recommend more than one capsule of a green tea supplement a day. That would be equal to about three cups of green tea. Usually one capsule is like three cups. So if someone says, "I'm going to have 10." And they're just doing it, they don't realise that that is not the way to go.

Dr. Felice Gersh:

So I always have to give my little warning about green tea as a supplement. But in terms of drinking it, the sky is the limit, that's fine. It doesn't have that much caffeine, but you can also get the caffeine out. You can buy decaffeinated, but this is another tip. If you make a cup of green tea and then you take that water with the green tea in it and you give it to someone else or you toss it or you save it, and then you use the same leaves, the same green tea tea leaves for another cup, almost all the caffeine went into the first cup. So you've basically decaffeinated it into the second cup.

Dr. Felice Gersh:

Just also just in terms of vocabulary, because it's no big deal but it gets confusing. So, when you have a biological toxin that's called a toxin. When you have a chemical toxin, it's called a toxicant. So that's why it doesn't really matter, but if you ever see the word "toxicant" and "toxin" and you say, "What is this? I don't get it." It's toxin really technically refers to something biological like a mycotoxin, okay, from mould, and toxicant is really relating to a chemical, but we inter-use them. But in case you read it and you say, "I don't know the difference." Now you know.

Kirkland Newman:

That's fascinating. So interesting. Well, you've been so generous with your time, Felice, and unfortunately we'll have to wrap up, but I just wanted to point out one more thing. You've certainly done a wonderful job showing us how hormones and neurotransmitters and the whole system interacts and really impacts our mental health. You've given us some fantastic tips on what to do about restoring hormone balance, and one of the things I did notice in your book, which talks about PCOS, is the really shocking numbers of women who suffer from PCOS have four times the amount of anxiety, 10 times the rate of depression, seven times the rate of suicide, and 10 times, well, between five and 10 times the rate of insomnia. If that doesn't prove that hormones are so crucial to our mental health, I don't know what does because PCOS is a hormone imbalance, an endocrine imbalance problem. I was really surprised by those statistics and it made me think. To me, that in a nutshell really shows how important our hormones are for our mental health.

Kirkland Newman:

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So, again, I mean, there are so many wonderful tips and this is just a fantastic book. So whether you suffer from PCOS or not I would highly recommend it. Felice, I could talk to you for hours but I think you've really helped us understand. You're fantastic. I could literally-

Dr. Felice Gersh:

Oh, thanks.

Kirkland Newman:

But thank you so much for your time, Felice. Can we just tell our listeners where can people find you?

Dr. Felice Gersh:

I do see patients in my office. I have a brick-and-mortar practice in Irvine California, Southern California. I also can do telemedicine appointments thanks to telemedicine. I have actually a built-in HIPAA compliance system in my electronic medical record system, it's all very secure and everything. My website for my practice is integrativeMGI.com because the name of my practice is Integrative Medical Group of Irvine, so it's integrativeMGI.com. I do an Instagram show and I'm trying to put out a show about every single week and they're all archived on my YouTube channel, and my Instagram, I guess you call it a handle, is Dr., and you have to put the period in there, dr.felicegersh. So it's @dr.felicegersh with the period after Dr.

Kirkland Newman:

Fantastic. Well, that's brilliant. Well, I'm really grateful for everything that you do for women, for men, for families, for mental health, and thanks for your time.

Dr. Felice Gersh:

My pleasure.

Kirkland Newman:

Thank you so much for listening to The Mindhealth360 Show. I hope that we've helped you realise that mental health symptoms have root causes that can and need to be addressed in order to sustainably heal, and I've given you some ideas about steps you, your loved ones or clients may take to start their healing journey. Please share this interview with anyone you think may find it helpful and don't forget to subscribe to keep up to date with our latest interviews on integrative mental health. If you want further information please go to www.mindhealth360.com or find us on social media. This information is for educational purposes only and is not intended to diagnose or treat any disease or to replace medical advice. Please always consult your healthcare practitioner before discontinuing any medication or implementing any changes in your diet, lifestyle or supplement program.