Mansoor Mohammed, Ph.D.:

For those children in that super sensitive age bracket of pubescent through 17, 18, those teenage years, which is when we see the trigger years for longitudinal, mental health concerns, we're putting, conservatively 5%. 5% of the youth population, and I can assure you, the statistics are more than that. We're putting 5% of our children, our teenagers in that age bracket through a social experiment right now, and we're not considering what's going to happen at the end of this.

Announcer:

Bulletproof Radio a state of high performance.

Dave Asprey:

You're listening to Bulletproof Radio with Dave Asprey. Today's cool fact of the day is that social isolation causes physical inflammation. And those do sound like lines from some sort of very elegant song maybe from the early days of rap. However, I don't think that's actually where it comes from, because it comes from the largest study of its kind out of the University of Surrey in Brunel University in London, looked at 30 previous studies, a meta study and found social isolation causes increased inflammation.

Dave:

They found that it's associated with the presence of C reactive protein, which is one of the top three bullet proof inflammation markers. You manage that instead of all this other garbage people are telling you to pay attention to like calories or whatever, get your CRP under control, you feel good. Social isolation raises CRP, that's bad.

Dave:

It's also tied to increased levels of fibrinogen, which is a glycoprotein that converts into blood clots, basically. And what do you know, fibrinogen is also a major marker, but not one of the top three. But it's a major marker to say do you have a cardiovascular problem? Fibrinogen is going to tell you a lot more than LDL. So what do you know being alone does those things. And inflammation is a signal to the immune system that says heal and repair damaged tissues and also defend yourself against viruses and bacteria.

Dave:

So too much inflammation damages healthy cells, tissues, organs, but it also is part of a natural repair process, you lift weights, you overtrain, you'll also get high levels of C reactive protein as the body seeks to fix itself.

Dave:

But get this, men are more likely to get physical inflammation from social isolation than women. No one knows why. Probably just because women are tougher. I mean, they do have to have babies after all. That seems like a terrible amount of work and stress to me. So maybe that's why, but ladies you win on this one, guys, we have our time being alone. Maybe that's why we like a beer and football or something. It's a proxy for having friends. I say this in week two of pandemic isolation. All right.

Dave:

If you heard laughter in the background as I was finishing up the cool fact of the day, that is because well, I was saying that when Mansoor Mohammed, the guest for today's show was in the background laughing. He's widely regarded as a pioneer in medical genomics, and has won a bunch of academic and industry awards. He's been on the show before talking about female hormones and genetics. And he's Chief Science Officer of The DNA Company, a company that I think is the top functional genomics company out there. I've sent them my DNA, and they go through it in a way that I've never seen before. Very, very different from, say, 23andMe kind of test. And I would say the most actionable genetics test I've seen so far.

Dave:

But I asked him to come on the show today, not to talk about hormones or cardiac risk or the things that he's normally thinking about, but to talk about what the heck is going on with this virus and how your own DNA impacts your ability to fight it, and there's a ripple effect that's caused in part by genetic that the pandemic is creating, I think you'll find that he's one of the top thinkers that you could possibly listen to about these topics.

Dave:

Mansoor, welcome back to the show.

Mansoor:

Thank you, Dave. And you always set it up that I can't start the show without laughing my head off. So thank you.

Dave:

You're welcome. I'm doing my best here. And I have no idea how I got into beer and football.

Dave:

But let's talk about beer actually. So we're all alone, I've seen more than a few people say part of my homeschooling curriculum now that I'm forced into homeschooling that I didn't plan on doing is definitely wine. So that they can tolerate, you know, it takes a lot to be at home and have the constant interruptions and the patience that's required to be a teacher of young children and hats off to all parents who do that.

Dave:

Whether it's homeschooling or just being a parent at all requires patience. What's the deal with alcohol and genetics and susceptibility to the virus? Good thing, bad thing, one glass a day, what's your take on it?

Mansoor:

So, I really don't think that a glass a day of what I would call, in this case, if it's wine with its flavonoids, you really do have to go back to some of your initial genetic abilities to a, metabolize alcohol that's neither here nor there, but b, dealing with the toxic aftermath, the aldehydes that we produce from alcohol, the liver function.

Mansoor:

Here though, what I really do want to point out is alcohol, not necessarily red wine but other forms of alcohol is a very cheap form or not so cheap form of sugar. And one of the last things we want to be doing during this pandemic is feeding our bodies excess sugar, okay? And there's a very strong reason for that everything that loops right back if you want to find one word that goes side by side with the SARS-CoV-2, it's inflammation and that's exactly where you started.

Mansoor:

So whether it is excess sugar, creating a dysfunctional insulin response, excess sugar with the alcohol creating inflammation just simply because of secondary alcoholic consumption. Anything that you do that creates an unregulated inflammatory response in your body is probably not the best idea, is never but certainly not during the times that we're in.

Dave:

All right, so sugar is bad, alcohol is bad and that even one glass a day thing you're saying maybe if you handle it really well, you could get away with it, but it's not going to be additive or ever... It's never going to be better than neutral and usually worse than neutral.

Mansoor:

That's my take and I think several studies have proven that out.

Dave:

I'm 100% in alignment with you on that. There is no reason to be drinking during this time and honestly Valium might be better for you than alcohol if you need to mess with your GABA receptors, which is what you're doing to relax with alcohol. Agree with that?

Mansoor:

I do. And, we at some point Dave we need to speak of the emotional effect, secondary to the pandemic that very few people are speaking of, and importantly, Dave, because this SARS-CoV-2 does not seem, and there are reasons for that to affect our youth as necessarily severely as our older or middle age folks, we're leaving the youth out of the equation but those youth are equally likely to be affected by the emotional discord of seeing mom and dad scared, mom and dad fighting, parents worried and they may not have the barometers by which to filter all of the stress that's societally going on.

Mansoor:

So just FYI, there are some enhanced, the name for today, the ripple effects. We're performing a societal experiment right now. The likes of which we haven't performed for a long, long time or ever before. And we need to be aware of this and we need to be aware of the multitude of effects this is going to have not just acute viral infection and acute hospitalization. There are broader effects here that we need to speak of.

Dave:

One of the effects that I'm particularly concerned about, in the last two weeks, 10 million new people have applied for unemployment. That's not all the people who lost their jobs, those are just the ones who applied. So call it at least 13, 15 million and they'll be more next week and more next week.

Dave:

All of those people who have kids are experiencing huge amounts of trauma. And kids are very susceptible to that. We don't have enough, we're going to lose our home, we're ungrounded, and that creates a whole lifelong pattern unless someone is fortunate enough when they're an adult, or when they're even a child to come in contact with a therapist or some other modality to help them deal with, "Oh, actually, the world is a safe place, even though I lost my house when I was six."

Mansoor:

Right.

Dave:

What can we do about that? And is there a genetic link to this?

Mansoor:

Hugely, and so for example, we know and actually excellent studies that came out of UBC, not too far from your home turf, University of British Columbia. That showed that the ADRB2B, A-D-R-A 2B gene, which is the gene that makes the noradrenaline receptor for the CNS.

Mansoor:

This gene comes in two versions, what is called an inserted version, or I version, and a D version or deleted version, individuals with the D version of this gene. And by the way, we're not talking to 1% of the population, we're talking about in Europeans, people of Western European descent, up to 25, 30% of people could have this deleterious version of this gene.

Dave:

I'm pretty much, I have a 25% chance of being screwed because I'm a white boy.

Mansoor:

Alter the words of Dave, look at who you're speaking to [inaudible 00:09:41]. But just places like you know, when we look at Rwandans, for example, and there's a huge societal study for Rwandans, they don't carry the D version. They don't at all. And this is a huge... when we look back from the epidemiologic and the psychologic studies of the Rwandan genocide, something remarkable happened here.

Mansoor:

20 plus years into it, researchers were looking at how people that were radically traumatized by those awful events, how they were able to move on i.e. better move on with their lives than would otherwise be expected. You have a young woman missing her right arm, chatting it up in the marketplace with the stall next to her, to this guy, only to find out he was the dude that chopped her right arm off, and here they are 20 years talking it up.

Mansoor:

The Rwandans do not have the D version of this gene. And the D version of this gene basically is a version that allows you or tends to make you be half glass, half empty, as opposed to half full. We tend to have the more [war 00:10:46] approach to emotionally discordant information.

Mansoor:

So think about it, Dave, all of those children and by the way, the studies of this, the penetrance, the size effect of this is incredible. Now look at this, that's the noradrenaline receptor it means that when you have the D version, you're noradrenaline receptor which of course is the receptor that is keeping you on alert, keeping you on what's the danger, what's going on, you have a much increased sensitized version of the receptor.

Mansoor:

Okay, put that aside, 25% of the population if not more, depending on ethnicity. What happens if you happen to be that person and simultaneously, you have the slow version of COMT, Catechol-O-methyltransferase, the slow version of MAO monoamine oxidase, the two enzymes that get rid of noradrenaline. So now take that person, the person with the slow COMT, slow MAO coupled with this sensitive ADRB2B this child, this teenager, which is about when in pubescent years, post adolescent years where you start seeing the psychologic phenomena of anxiety, depression secondary to emotional stimuli.

Mansoor:

Now societally, we've got legions of these teenagers, they are now disconnected from human contact with their friends more than they've ever been before. They're on social media. They're in homes with parents that are on edge. They're trying to process what's going on, is this going to be the end of the world times, and no one is speaking to them. And this segment, whether it's out of every million children, even if we played conservatively, 10% of these teenagers conservatively will have the combination of profound genomic makeup that significantly predisposes them to a much more anxiety based, much more war based response to what's going on.

Dave:

How do you know if you or your kids have that? I don't even know if that's in the stuff that your company does, but I mean, can you get this from any genetic test? Can you just look at the numbers?

Mansoor:

So the first is that it is our, we have added it to our genetic profile because if it's importance. So we look at all three of those and the cascade genes. So-

Dave:

You have my genes, do I have those? Can you look at those? Are they available to you? I'm willing to share that information. I probably do. I probably have all the worse shit.

Mansoor:

I'll pull it up right now.

Dave:

Okay. I'm really curious. But as we're doing that, is this the stuff if someone has a normal, whatever run of the mill genetic test that isn't functional genomics, like you do, can they look up the ADRB?

Mansoor:

Oftentimes, the ADRB2B, because the ADRB2B variation is not a snip, most of the existing test profiles, they're not going to have it now. So here we go. We've got Dave Asprey.

Dave:

Oh, man I'm pretty sure I have the COMT problem. I probably also have one MAO issue, but I don't know if it's the one you're talking about. And if there's multiple COMT things. So let's see, and you're like, "Oh my God, this guy's like the worst European genetic." [crosstalk 00:14:00]

Mansoor:

No, no.

Dave:

I'm totally kidding.

Mansoor:

Not at all. I'm pulling up all of the results because they're, we actually have even the updated meaning, the additional genes here, so let me pull it up all for you. Okay.

Dave:

You can tell we didn't plan to do this, you'd have had it up. I'm just, I'm curious, and I want to use myself as a guinea pig. Partly because I'm pretty sure I have a lot of this crap and b, I'm doing all right in life. And so I don't want people who are saying, "Oh, I have these genes," or "My kids might have them." Look, it's all hackable. That's my point here.

Mansoor:

Good call. Very, very good call. Okay, so here we go. We've got Mr. Asprey up. First things first, actually, Dave less than what you would have thought you actually have the fastest version of COMT. Remember we spoke about this a little bit in terms of how your brain clears dopamine, right? So that COMT you're actually the primary variation, the RS 4680, that's one of the most, if not the most functional variation in the COMT gene. You've got the double [inaudible 00:14:58] like it fast.

Mansoor:

Now, COMT is going to be the enzyme clearing away your noradrenaline, and you've got the fast version of COMT-

Dave:

So I dropped my noradrenaline, but also I dropped my dopamine really fast, which means I get easily bored by all the dumb people around me.

Mansoor:

[crosstalk 00:15:15].

Dave:

Did I interpret your genetic test, it's not what it says in your report?

Mansoor:

Well, you just... and by the way-

Dave:

[crosstalk 00:15:21] Totally kidding, I'm just trying to sound arrogant.

Mansoor:

Well, the extent to which you've doubled down in that, you would recall that you have the lower dopamine receptors, lower density. So on the one hand when it comes to dopamine, it takes a fair bit to get Dave going and Dave is going to be, yeah, he needs to be... Dave would have shot himself in the foot if he stayed as a nine to five accountant. Not decrying accountants, but Dave has to do something. He's got to be, and everyone that knows Dave, now you understand why he is who he is. He's got to be that individual that he'll get bored easily because why? He has lower dopamine binding capacity.

Mansoor:

It takes more to get Dave's juices going, so to speak. Dave note, do not comment on that, okay? It takes more to get his juices going.

Dave:

I thought you were going to start dancing for me.

Mansoor:

And by the way, he's got the fastest COMT. Now Dave, you pair up so that's the dopamine pair from the noradrenaline, you are heterozygote for the ADRB2B. So you're in the middle. The DD's are the folks I tell people I can spot a DD when they come into my clinic before they enter the door. DD's are the folks and incredible work by Dr. Todd from UBC, what she's shown is remarkable.

Mansoor:

They've shown Dave in teenagers, and they've shown them images of faces, just faces on the screen with a few seconds per face. And DD's are the individuals that remember the faces that have a look of sadness, a look of worry. They imprint, the DD's imprint on negative emotional variances, they literally imprint on the negative, much easier than they do on the positive.

Dave:

And what percentage of people are these?

Mansoor:

Again, in the western Europeans, at least 20 to 25% of Western Europeans.

Dave:

What about okay in Asia?

Mansoor:

So what we have is, we know that in some African populations, it's much lower. In Asians between what we'd call South East Asians, it's approximately the same as the western Europeans. In the Chinese population, so in other words, East Asians, Han Chinese, the D is higher. So it's the flip, there's a higher percentage of D's in the Han Chinese population.

Dave:

And the higher percentage of D's means that there's fewer people who have this I'm highly traumatized thing.

Mansoor:

Actually-

Dave:

The opposite. So they get more traumatized.

Mansoor:

They, but look at the beauty of it. The Han Chinese ethnically are the highest percentages of fast COMT's.

Dave:

So, they can pull noradrenaline out.

Mansoor:

There you go.

Dave:

Interesting.

Mansoor:

Right, do it's a balance.

Dave:

So there's a good number of people we don't know the exact percentage globally and all that who are going to be more genetically prone to psychological trauma from any cause, including social isolation, including the feeling that the apocalypse is here, even though it's actually not other than maybe economically.

Dave:

It's not the best year for disease by a very, very long shot, but it's not like a third of the global population is going to die this year. But a lot of people feel like that, especially kids because they don't know.

Mansoor:

And the media is doing obviously what the media always does, and it's feeding that beast.

Dave:

They're recording podcasts about Coronavirus every day. Oh, wait? Sorry. I mean, we are kind of doing that right now. But at least we're spreading the good word about this.

Dave:

All right, so let's say that you're... I have two questions. If you're one of those people who you might have already just identified yourself or maybe have your genetic profile somewhere or another, what could you do to hack that response so that maybe noradrenaline is less of an issue for you.

Mansoor:

Excellent. Well, one of the first things and here we're going to go into a little bit of a double down. What's the other two things that are... three things that are trending... Now you can go into four or five things. So let's just quickly list this. When you're in self isolation, all things equal, especially with the months that we're still in i.e. still colder months. One of the first things that is dropping societally, vitamin D levels. We're indoors more than we care to be in any good time of the year of March, April.

Dave:

That's tied to noradrenaline?

Mansoor:

Well, it's tied to the overall circadian rhythm of the body, and that is tied to your noradrenaline response. So first and foremost, if we're not getting good circadian rhythms and what's going to be linked to that, we're home people are binge watching Netflix much later into the night than they were before. Their entire circadian rhythm is off, their vitamin D levels are off, their circadian rhythm is off, their sleep cycles.

Mansoor:

When you asked Dave, about that overall increase in inflammation when you self-isolate, these are some of the denominators that are adding to that increase in inflammation.

Dave:

Okay.

Mansoor:

Ruptured dysfunction to the circadian rhythm, which of course dramatically screws with our cortisol response, our sleep cycles then screw with our BDNF, it messes with how our brains are producing optimal levels of brain derived neurotrophic factor which individually by the way, is also highly genetically controlled.

Mansoor:

But here's a phenomena Dave that we have to speak about. When the panic buying so inappropriately, when it happened, and people went off and they started hoarding. When you go into the supermarket, what were the shelves? And what are the shelves that are empty? They're the shelves of the non-perishable foods, isn't it? Because that's what you think you need to hoard. What are the common

denominators of non-perishable foods? High in sugar i.e. processed, i.e. pastas and rice and flour, high in carbs, high in salt, all those canned foods.

Mansoor:

Not saying that you can't get canned foods that are low in salt, but generally speaking. So what is happening here, let's just paint and this is not a fantastical, hysterical picture. It's a realistic picture. During this period of self-isolation, folks are indoors more than they've ever been. They're faced with economic stresses that generally speaking more than they were accustomed to. They're eating foods that are precisely predisposing them especially if they were latent genetic predispositions to hypertension, insulin resistance.

Mansoor:

Their vitamin D levels are going down, their mobility, their exercise linked right back into their stress response, right back into their blood pressure, right back into their glucose metabolism is down. And what happens to be the two major comorbidities associated with this virus, hypertension and type two diabetes.

Mansoor:

So, our agencies, our health agencies, our government agencies, our healthcare agencies are, fair enough, not questioning whether we need some social distancing and self-isolation. But no one is informing the public there are multiple different ways to self-isolate. And we need to be careful that we're not digging a deeper hole for ourselves, per the factors that I've just mentioned, Dave.

Dave:

Is there a supplement that you could take if you're one of the... what's the [inaudible 00:22:50], tweakers? What do you call people like that?

Mansoor:

Which folks?

Dave:

The people who are way more susceptible to the social isolation?

Mansoor:

Well, I don't know there would be a name of it. We could come up with a name.

Dave:

I'm trying to come up with a very triggering name that would at least make you look horrified, I failed. But you're not a tweaker. You're someone who is probably also energetically sensitive. It's not that all these are all negatives. You probably have more empathy. You're probably connected at a different level. My shamanic friends would probably say your 19th Chakra radiates with a special illuminance in the ultraviolet range. I have no idea but you probably have some superpowers that go with it, right?

Mansoor:

Actually, Dave, what it's what makes you, you and after, the way you filter massive amounts of data. If you didn't previously know that, if you're just actually giving internal Dave regurgitation, you hit it on the head.

Mansoor:

There's a ying yang to all of these things, right? And so those individuals who literally when they walk into, those children, you know Dave you've always seen it, right? The kids that they walk in and they're like, "Mommy, are you okay? Mommy, are you mad with me? Did I do something wrong, mommy." Those are the very children that are the DD's, ADRB2B DD's, if not IDs. They're more empathetic, but again, they're more burdened, they're more [crosstalk 00:24:05] the emotional discord.

Mansoor:

And parents, societies, we need to be talking about this because we are performing. If we don't talk about this, Dave, for those children, in that super sensitive age brackets of pubescent through 17, 18, those teenage years, which is when we see the trigger years for longitudinal, mental health concerns, we're putting conservatively 5%. 5% of the youth population, and I can assure you, the statistics are more than that. We're putting 5% of our children, our teenagers in that age bracket through a social experiment right now, and we're not considering what's going to happen at the end of this.

Dave:

Are they going to turn out to be bullies? Are they going to turn out to be kids who are more likely to have suicide, more likely to do violence? What typically is an outcome? It's not preordained at all you just ramped up your risk factor here.

Mansoor:

Right. And again so important and thank you Dave. We're not speaking of carved in stone what we're speaking of is a predisposition, a predisposition that is the very meat and the very cornerstone of everything you brilliantly do. Which is to say, "Look, own your predisposition, own it and then bio hack it." So here-

Dave:

Like being a fat ass, that was my predisposition. So I had to hack that real hard.

Mansoor:

So here, let's get that predisposition, understand who we are. We can't get it fair enough. So now to answer your question, what are we seeing? These are the children yes, increased risk of suicide, increased risk of that slow but insidious vortex into behavioral tendencies of now they're not just physically self-isolating, they are mentally and emotionally self-isolating, or self-compartmentalizing themselves into behavioral patterns that they do and they take to try to avoid the stimuli that.

Mansoor:

And so what they're deeper and deeper into there, whether it be gamification, games, whatever is their response to trying to minimize their lack of ability or reduced ability to handle these social stresses. And that paves the way for behavioral contacts when it comes to relationships, the ability to just reintegrate is significantly imperative.

Dave:

So it's not just 5% or 10%, it's all the people that they will date all the people, they'll come in contact with, all the people they'll work for, all the people they'll hire, all that stuff, it gets built in, so we are doing a major change to society. Then again, it's also major change if we did nothing and we lost a huge number of our village elders.

Mansoor:

Of course.

Dave:

That also creates its own set of traumas. So we're damned if you do, damned if we don't. But I mean let's say you're one of the people. I mean, can you take L-Tyrosine, the amino acid in the morning, can you take I don't know makes L-Dopa, [inaudible 00:27:03] inhibitor might be bad.

Dave:

I don't know like what would you do? One was the pharmaceutical, one was a supplement? Give me like the top three things other than vitamin D. Oh, by the way circadian vitamin D is a morning one, not a nighttime time one, right?

Mansoor:

Thank you, of course, really important. And I cringe when I hear people say, "Well, yeah, I take my 2000, 3000, 5000 before I go to bed." I'm like, you're just signaling to your body that you got up.

Dave:

I think it's dangerous to do that. Vitamin D is a morning thing or before noon, or you don't take it in my house, yeah.

Mansoor:

Thank you. No, no, thank you so much. Thank you so much. So with the caveat that I'm by no means prescribing anything for anyone, the whole realm of adaptogens. So let's start with practical exercise hugely impacts the down regulates the noradrenergic pathway. It's why you tend to when you're worried, you're stressed out, you get an exercise regimen. So in other words, what we see is there's a correlation between improved BDNF which you can directly correlate back to things like exercise and intermittent fasting and maintaining healthy circadian rhythms and an improved ability to normalize your noradrenergic response.

Mansoor:

So in other words, start with lifestyle, there are lifestyle things we can do here that can dramatically improve that that hyper tendency of noradrenergic response number one. Then we get into the nutraceuticals are speaking in that realm and you just beautifully started off with it, the adaptogenic type nutraceuticals. I'm going to stay away completely from the pharmaceutics because I want to stay away from being... well, I'll stay away from it.

Dave:

Yeah, no, it's I understand and that requires doctors and frankly, if it's not emergency medicine right now your doctor's office is probably closed or even just a bad place to go.

Mansoor:

Exactly.

Dave:

Yeah.

Mansoor:

But you know, Dave just before we leave this point again, let's look at something here. Woman, all of the ladies out there, the beautiful, the expecting moms out there. Now listen, this is important. Those moms that are pregnant especially within their first trimester, if they are not handling the stresses that again everyone else is faced with right now. And their cortisol levels are up beyond which they were when they were pregnant with little Johnny the first pregnancy or Susan their second pregnancy and now they're pregnant. And they've got these elevated cortisol levels, elevated cortisol levels in the mum, the expecting mother during early brain development in the developing embryo. If that embryo carries the S, another index another non snip phenomena of the SLC684, the 5HTTLPR, this is the gene... Well you are the perfect 5HTTLPR, you're LL-

Dave:

This is perfect as in I'm susceptible or not susceptible?

Mansoor:

No, no perfect as in you are better, you are more likely to be optimal in your serotonin release and reabsorption. So you are optimal in a healthy way. That is the L or long allyl. So you are long Dave. Again do not comment on that.

Mansoor:

If you had the S-allyl or the short allyl, a short version, that's dangerous. Now, if you were an embryo that is an S embryo in the womb of a mother who has elevated cortisol level-

Dave:

Like right now.

Mansoor:

[crosstalk 00:30:32] elevated, like right now, the amygdala, Dave, the amygdala, that embryo develops smaller and more compact. The amygdala of that developing baby, that baby is born with brain activity that has a fine hair trigger amygdalic response. In other words, they've got more of that reptilian fear based response dramatically well establish.

Dave:

This is so important right now because in LA, the businesses that got a lot of extra business right now that are still open are cannabis dispensaries and gun stores. So this is a California thing.

Dave:

Now you go up to Canada and the businesses that got a big boom were sex toy sellers. This is not a joke, that actually happened. So people are selling out of lube up here in Canada.

Dave:

Now, I'm not the first person to forecast that there will be a Corona boomers about 20 years from now. There are an amazing number of people getting pregnant right now who might not even know it, and probably aren't planning it. Most people don't plan to get pregnant the middle of a pandemic, they just get bored. And then well, hey, you know one thing leads to another.

Dave:

So if you are pregnant, and you're listening to this show, you better start doing some deep breathing like right now. There is stress in the world and you can put a bubble around your baby energetically. There's all sorts of stuff but if you don't do that you're learning on the show right now from a guy who really understands what it does to a baby's brain 20 years from now, and it's only three months, of just like, seriously just chilling and just taking an hour or two a day and doing whatever it takes.

Dave:

And if you're the guy who got her pregnant, now's the time you just learned these two words that you're going to have to know anyway. They're genetically active and the two words are, yes, dear.

Mansoor:

The Biggest epigenetic, their epigenetically incredible words. Dave listen, you've got sorry to put you on the spot Dave. You have a responsibility because of who you are, and what you've done, and how you've literally turned on its head the way the individuals can look at the human body. You've got a responsibility Dave, and I'm just going to say it here and now. You should collate the content from your amazing work on your site, collate content and anything you have that can be used to helping how we deal with stress, and all of the amazing things you should and you should collate that content and have it available to your community. I really mean that Dave.

Dave:

It is all on DaveAsprey.com. but I don't have a tab for stress.

Mansoor:

Yeah, no, that's what I mean.

Dave:

Okay I'll do that.

Mansoor:

That's exactly what I mean.

Dave:

I'll do that. Thanks for the suggestion. I'll actually get right on that. I'm taking a note.

Dave:

Now, that thing about pregnancy, my first book was on fertility in epigenetics. It took five years to write it 1300 references and the effect of stress is really well known. But what we didn't know back then because I don't think the studies even existed that came out in 2011. I don't think we knew what you just shared about the fact that cortisol early on does that.

Dave:

So let's take a step back. So now we know we have a vulnerable population of children. We have people even in the womb, where we have issues around stress. And you're saying adaptogens would be useful, probably not in first trimester unless there's a study.

Mansoor:

No, no. Hold on exactly. That was the previous comment. You get into pregnancy, all bets are off-

Dave:

Especially [in Arabs 00:33:58], you have to be careful.

Mansoor:

Exactly, absolutely.

Dave:

And that was why it took so long to write that book because the other recommendation I had a [Vatican 00:34:05] literature.

Dave:

Now, for the rest of us who aren't pregnant, explain what adaptogens are? Longtime listeners probably already know. But tell me your favorites. I'll probably compare some notes with you there. But what are the adaptogens that are going to help all of us have more resilience? And resilience means less likely to catch it and less likely to go to the hospital if you get it, if I'm defining it properly.

Mansoor:

From an emotional perspective. So these are the adaptions, you know, the stress [inaudible 00:34:33] perspective. I love and there are different degrees. All of the listeners out here, this is not a prescription for anything, but these are some of... so I like the Athenian, Ashwagandha for me, is really way up on the list for me personally. As much as we don't think of magnesium per se as an adaptogen, but healthy magnesium intake of the, and by the way, various individuals respond differently to the various salts of magnesium.

Mansoor:

Don't think that magnesium is just magnesium bisglycinate or magnesium nitrate, okay? So there are different salts of it, specifically one of them to call out a shout out to magnesium threonate, which is the magnesium that can cross the blood brain barrier and improve BDNF, brain derived neurotrophic factor. But just FYI, like vitamin D, we don't want to be consuming most of the magnesium. We can and should potentially take at nighttime, magnesium threonate we take earlier in the day because it's involved in ramping up that awareness.

Mansoor:

You take too much magnesium threonate just before bedtime, you're telling your body surge BDNF, surged BDNF is not a good proposition for a healthy night's sleep.

Dave:

That's interesting, because when I take threonate and I take a ton of lion's mane, the Australian the lifecycle stuff which raises BDNF dramatically, I take it before bed, I get three times more REM sleep.

Mansoor:

Really?

Dave:

Yeah, and if I don't take it I get way less REM sleep. It was the hack. I hacked my deep sleep with the true dark glasses and I hacked my REM sleep... I mean after hundreds of different things with little tiny bits, these are like the two or three x improvements.

Mansoor:

Specifically, so there we have and well for all of the listeners, this is what... No, well, that might be it but this is why Dave Asprey is Dave Asprey. So Dave, you've just talked... so all physiologic, what I call logic flow physiology, logic flow physiology we don't want to ramp the BDNF before bed generally speaking.

Dave:

Okay. That I did not know. That's super useful, and nerve growth factor, same thing those are daytime only?

Mansoor:

Well, they are earlier day circadian rhythm things. So generally speaking, they just simply what hyper awareness, now maybe that factors into the REM sleep, but generally speaking, you would want those faculties, that sense of how you are earlier rather than later. So many of my patients when I talk to them, and they'll talk about learning about magnesium threonate, and then they'll say I started but I noticed my sleep is off. The first-

Dave:

Wow.

Mansoor:

"You're taking it at nighttime, aren't you?" "Well, yes, that's when I take magnesium." I'm like, "Yes you take magnesium bisglycinates, and the citrates, and the nitrates, those you can take later in the day from a relaxation muscle relaxation perspective and mood relaxing, magnesium threonate earlier in the day. That's generally what I go off of.

Mansoor:

Now Dave, you've got to probably consider how is that partnering with the lion's mane. Is there some type of synergetic function or correlation or outcome? These are things that this is where we get into knowing what you put one plus one sometimes doesn't equal two when it comes to micronutrients.

Dave:

Okay, that makes a lot of sense. And I used to tell people take all your mag at night and then when I believe this was for Headstrong, the book about the brain and mitochondria, I found a study that didn't exist when all the other stuff came out. And it was the circadian rhythm of magnesium, and it peaks at noon.

Dave:

Which means you should probably take it in the morning. So I take half in the morning, half at night, but because of what you said, I'm going to switch my threonate to the morning. And I'm going to switch my other groupings of mag to the night and see what happens to my sleep.

Mansoor:

That's what I do. So that's what I do. I take my threonate, and that's and again, and this is the beautiful thing. And by the way, to all of the listeners out there, I should have always started as I do humility, we're always learning.

Mansoor:

We're looking and by the way, the need and the sense of learning does not negate the ability as Dave has championed to learn and do the best that you can with what you have, okay? Certainly better than nothing else. But if you find something that works better for you, ultimately, what works for you, works for you.

Dave:

It's the most important thing. I appreciate you saying that and you might not be normal. You can be part alien like me, and then, hey, what work for everyone else just didn't work. Apparently there's some small percentage of people who go on a low fat, low calorie diet and actually lose weight and can handle their life that way. It's just not most people and I thought I was weird when it didn't work for me.

Dave:

Okay, now adaptogens, theanine, ashwagandha, magnesium.

Mansoor:

Those are my top three, those are my top three favorites.

Dave:

I like to explain what an adaptogen does, as the idea of a throttle response. So if you're in a racecar, or a Tesla, or something like that, you press the gas and the car goes right away, and you let your foot off the gas and it slows down right away. It doesn't coast.

Dave:

And if you get in a normal car, you press the gas, you wait one, two, three and it kind of goes [inaudible 00:39:45] and it goes up and then you let your foot off the gas and it coasts for a long time at that higher speed. So you don't have that ability to go up down quickly. And I'd like to think of adaptogens as increasing throttle response on stress. So when there's a stressor, you get more stressed more quickly, and then you stop being stressed as soon as it's gone. So you end up spending much less time in a state of stress because I turned it on, I turned it off, I'm good. Instead of it turned on, and it stayed on for the rest of the day because something happened. Good explanation. Am I oversimplifying?

Mansoor:

Oh, God beautiful explanation, because what you did, I'm presuming intentionally is what you've highlighted as for all of these responses, including inflammation. It's not that we don't want it, we want it but we want the ability to get the benefit out of it, and then return to a state of neutral.

Mansoor:

We neither want, these are the two states we don't want. We don't want the ability to not elevate these responses. And we certainly don't want the ability to stay stuck or plateaued in those responses. So what you've just done is beautifully illustrated, you want to be able to go through a circadian rhythm of the response. Beautiful explanation, Dave.

Dave:

Thank you. I appreciate it. I'm always trying to think of how do I explain to my kids. They're, "Daddy, what are these things?" It's just a funny situation.

Dave:

Now, I want to go a bit deeper into some of the other biochemistry here. So you and I have heard of Ace II, we know what that is, but most people had never heard of Ace II except maybe the pet detective until recently and they said, "Oh, wait. Ace II, that's how the virus gets in your cells." Can you define what Ace II is and talk about how genetics determined our risk there?

Mansoor:

Absolutely. So the ACE before we even put the II, the angiotensin converting enzyme, is exactly what the word says it is. It's an enzyme, and it's an enzyme that functions in the angiotensin renin system, which simply is one of the most important systems of renal kidney function and maintaining blood pressure. And there's that theme again, blood pressure, okay.

Mansoor:

So the renin angiotensin system which has multiple functions of the body, but generally speaking, related to kidney, renal, cardiovascular, blood pressure, vascular health, that's your big umbrella, Ace.

Mansoor:

Now there are two Ace genes very closely related to each other, each of them making an enzyme. There is the ACE I gene. It's on chromosome 17, which means that is an autosomal chromosome. We have two copies of it, and that's the gene the Ace I gene and the Ace I enzyme. That's the enzyme that we inhibit when we take things like herbs, i.e. these angiotensin, these blockers for blood pressure, it's the ACE I gene that we are fiddling with.

Mansoor:

The ACE II gene, which does contribute to the whole angiotensin renin system is on chromosome x, one of the sex chromosomes. It's not on the autosomal chromosomes. Why am I stressing this? Because women have two copies of the ACE II gene one and each X chromosomes. Men have one copy of the ACE II gene. Because we are XY's, we only have one copy of the X chromosome, therefore, we only have one copy of the Ace II gene. Okay, so a little clarification, a lot of doctors I've been hearing them speak, and they are mistaking the ACE II gene for the ACE gene, the ACE I, two totally different genes, number one.

Mansoor:

Number two, this Ace II gene and its role in SARS-CoV-2, it's not new at all. In fact, it was the same gene that makes the same enzyme that is at times associated with the cell surface, which is why we're calling it a receptor. But again, many clinicians are confounding. It is not a receptor in the classic term of it. It's an enzyme that can become embedded in the cell surface acting as a receptor. And yes, the Ace II is the thing that the SARS-CoV-2. But by the way, the previous SARS virus, the original SARS virus also entered the body via the ACE II receptor gene.

Dave:

Okay, so it's basically Ace, it's an Ace II receptor that acts like an ace hole. So, I took a lot of asthma drugs before this episode. I apologize on behalf of all dad jokes of all time, but that was a pretty good one. Now, does humor help with the virus load? Yes, it does, just do it a public service.

Mansoor:

The funny part, Dave is you don't understand how appropriate that visual analogy is.

Dave:

It is because it's what a spike protein goes into. Now, I was there.

Mansoor:

All right. Okay, there we go.

Dave:

But in other words, it really is an enzyme. It's not really a [whore 00:45:08], a lock and a key and all that kind of stuff people talk about.

Mansoor:

Very well, exactly. A few things about the ACE II gene and its risks. So of course, we all have it, woman two copies, men one copy. It is significantly differentially expressed in the human body. Not every cell in the human body expresses this gene product.

Mansoor:

Some of the cells unsurprisingly, that are expressed the highest are cells in the lower respiratory tract unsurprisingly, kidney cells are actually some of the highest expressions obviously correlated to its function in the renin system. But here's a little tidbit that people have forgotten.

Mansoor:

The tongue is one of the highest expresses of Ace II by far, and so it lends some credibility. We've been talking about the sputum of people coughing, but when we look at those people that are asymptomatic but also spreading the virus, much of it is likely coming from just saliva, not sputum. Not mucosal expulsions from coughing, but just the talking as loudly as I talk, just FYI.

Dave:

Okay, is this also possibly tied to this idea that, wait a lot of people lose their sense of taste and smell? Are the Ace II receptors tied in with the taste receptors given they're both on the tongue? I'm just completely asking because I have no idea.

Mansoor:

I don't know. And it's always good thing to say that I don't know but boy did you just because by the... Did you know that one of the weird side effects of SARS-CoV-2 infections is loss of taste.

Dave:

It's one of the early symptoms. So, if you're saying, "I don't think I'm sick, but this pizza tastes like crap." You might want to self-isolate even more.

Mansoor:

No, that's a [inaudible 00:46:57], you've just given me something I need to look into that. I'm not aware of it but me not being aware of it doesn't mean that it's not correct, obviously.

Dave:

I have no picture in my head for Ace receptors and taste receptors, but there might I bet you there's some kind of... they grow on the same buds or something. I have no idea you. You're way deeper in the science than I am.

Mansoor:

Well, what they do show is in the nasal, bronchial, those little villi that are flapping around, that that helped with the detox and the filtering of the air passage. It is literally expressed differently on the two different surfaces of the villi hair. The Ace II is expressed more on the underlining villus hair, as opposed to the overlining villus hair. So just even in the structure of those little flagging little things, it's expressed differently [crosstalk 00:47:45].

Dave:

Wow, that is interesting.