



How EMFs Impact Your Microbiome

Guest: Marco Ruggiero, MD, PhD

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Dr. Schaffner: Welcome, everyone, to *The Body Electric 2.0*. I'm so excited to have my colleague and friend, Dr. Marco Ruggiero, talk to us about a really important topic. And Marco always has these really innovative, cutting-edge ideas on how to approach the diseases and the stressors of our modern time.

And we're going to be talking about a novel natural way to protect our body from EMFs. So, welcome, Dr. Ruggiero. I'm so excited to have you on *The Body Electric 2.0*.

Dr. Ruggiero: Thank you, Christine. This is a great opportunity. One of the many that you're giving me to share the results of my research. So, thank you so much.

I hope that this talk about electromagnetic fields and the damage that they may inflict to the human body and how can we protect ourselves will be interesting for everybody. I know you have a number of questions for me, and I'm ready to answer your questions.

Dr. Schaffner: Right. And I'm so grateful you prepared a slide presentation to really bring these concepts to life. And you're always a wonderful presenter. So, thank you for being so thorough.

And this is such an important topic, and we have people discussing EMF, which we'll get into why we need to be concerned, but you also have some

really innovative ideas of how we can increase our resilience to the exposures we have.

And many people might not know that you are a trained radiologist, and obviously, being a radiologist, you learn a lot about radiation, of course, how that applies to diagnostics in the body.

But from that perspective, and from that point of view, what is your opinion about EMF and the increase in exposure that surround us and how it impacts the human body?

Dr. Ruggiero: Well, thank you so much for pointing that I have been trained as a radiologist. Radiations, electromagnetic fields ranging from ionizing radiation, like the x-rays that we use in diagnostic radiology, and also radio waves and all types of EMF are bread and butter of my training.

Going into the specifics, I'd like to show what my specific training on mobile telecommunication, electromagnetic fields, and human cells has been. We began working when I was at the University of Florence, Italy, on these topics in the late nineties.

So we published two papers in 1999 describing the effects of EMFs on human breast cancer cells, as well as on human neurons. So, these two topics, cancer and neurology or neurosciences, and how they are affected by EMFs, will be discussed in this presentation or interview or talk. I don't mind the way you want to call it.

Then in 2002, we explored specifically the effects of those mobile phones of those days. They were called global system for mobile communication, GSM, specifically on skin cells, human skin cells. You may wonder why human skin cells.

Well, we knew then, and we know now that human skin cells or the skin, in general, behaves like an antenna, like an antenna that receives electromagnetic signals.

So this is an excerpt from a paper that I will be discussing later on that clearly says we showed that the 5G, in this case, millimeter waves, could be absorbed by the dermatologic cells, the cells of the skin acting like antennas.

Now, we knew that in 2002, that's why we decided to study the effects of those old cellphones — they are old by now. They were top-notch in those days — on the human cells.

Then in 2001, we were invited to write a chapter on electromagnetic fields and cancer in the most respected and most famous encyclopedia of cancer that is published in Heidelberg, Germany.

And this chapter on electromagnetic fields and cancer has been reprinted several times and, of course, updated. So the latest update is in 2017. And it's interesting.

At least, I think it is because for the very first time, we describe the effects of EMFs not only on the human cells, that is, the human cells that have our DNA, but also on those cells that are inside us, the microbiome.

Now, we know that about 90% of our cells are microbial cells. We are only 10% human if we look at the number of cells, and we know a lot about the effects of EMFs on a human cell. So, as I said, we began studying on human breast cancer cells, then on human neurons, and then on skin cells.

But we knew little about the effects of the EMFs on the microbiome, the microbial cells. As we wrote in this chapter, considering that the human microbiome is involved in development and function of, I would say, all the systems and organs and most notably the immune system, in this chapter, we hypothesized that the effects on the microbiome may be one of the mechanisms to which the electromagnetic fields, both endogenous and exogenous fields exert their biological effects.

In other words, the effects of EMFs on the human microbiome open a new perspective in assessing the risk for health and in preventing that. Why? Because until now, people are focusing, including ourselves, of course, on the effects of EMFs on the human cells. And we know a lot about that.

But little has been done to focus on the effects on the friendly microbes that contribute so much to our wellbeing. So we have a number of different perspectives to study when we want to assess the effects of EMFs on the whole body. That is not only on the human cells but also on the microbial cells.

Now, 20-some years later, if we go and look at the literature that you can find in the US National Library of Medicine in the database called PubMed, you find a number of papers confirming those early observation of ours.

This paper was published quite recently, November 02, 2020. So just a few days ago. And it is also by researchers from US and Korea, and they did an enormous work. Essentially, they studied 46 different articles that they found in the literature. And they conclude that cellular phone use with cumulative

call time of more than 1000 hours statistically significantly increases the risk of tumors.

So it's a confirmation of what we had observed 20-some years ago. This comprehensive meta-analysis of case-control studies-- So, we're talking about not an ecological observation, but serious case-control studies found evidence that links cellular phone use to increased tumor risk.

Now, just to give you an idea of the numbers, they studied more than 66,000 participants and 46 case-control studies.

And the studies came from all over the world, from Sweden, Denmark, United Kingdom, Finland, Norway, Germany, United States, Israel, Japan, Italy, New Zealand, France, Brazil, China, South Korea, and Thailand. So from all over the world, just to rule out any limit of observation.

So, I would say that this is a clear demonstration that those observations of ours 20-some years ago were on the right path. And there is no doubt as of today that EMFs they affect our body, both our human cells and our microbial cells.

I'd like to pinpoint also this study that was published a few months ago in April 2020. Again, you can find it in the National Library of Medicine of the US.

And here, the author goes a little bit further because, in addition to these effects, they claim that official documents show that the impact of electromagnetic waves is not only physical and biological.

Indeed, the climate and the behavior of the population are also targeted. So, essentially, we are immersed in EMFs. These EMFs are not in our calls. We know a lot, but still, there is a lot to be known. So that's the best I could do in a few minutes to answer this question of yours.

Dr. Schaffner: Yeah, no, that's excellent. And I have seen some of those recent publications that I haven't seen yet, so that's great that this information knowledge base is growing, and the data continues to point and say the same story. And no, that's really great, Dr. Ruggiero.

And then it reminds me, too, as you're studying the EMF and the microbiome, it's kind of the same parallel how we look at glyphosate, but we really look at glyphosate's effect on the microbiome.

And the story of these things and their interactions with the microbiome has a lot to do in determining our health because we are more microbial cells than human cells.

So it has to have an impact. So I appreciate you bringing all of those great points together. And as we expand our knowledge about 5G and we also expand our knowledge to this increase in exposure of EMFs and how this can impact our immune system, how do you feel that these might be related to, as we record this in 2020, really the evolution and the pandemic of COVID-19?

[10:00]

Dr. Ruggiero: Well, this is a very hot topic. And let me tell you that all the information I am giving today is supported by scientific articles that you can retrieve and you can study. So you don't have to trust my words, but I am providing scientific proof for what is worth of what I'm saying.

Now, this is not scientific proof, but if you want to learn a little bit about some alternative views on 5G, I recommend that you go to YouTube and look at this *5G APOCALYPSE - The Extinction Event*. It's a film made by a good friend of mine, Mr. Sasha Stone.

And I, together with a number of other experts or so-called experts, participate in this film. So, I think it could be very interesting. But besides this, if you go to the US National Library of Medicine and you look for 5G and COVID-19, you end up with articles that describe very clearly and with no ambiguous terms that this is a conspiracy theory.

So there is a no link between 5G and COVID-19. It's a conspiracy theory. One of the craziest. The same level as a flat earth, or the earth is ruled by giant lizards or things like that.

So these are a couple of articles that explain in very clear terms that this is only a conspiracy theory, not worth even discussing. And they might be right.

However, I found this that might also be interesting, if nothing else, for the sake of curiosity. This is a study that, again, you can find in the US National Library of Medicine.

Or actually, you could find the past tense. And this study produced by scientists from the Guglielmo Marconi University of Italy — Guglielmo Marconi is the one who invented the radio — Central Michigan University, and First Moscow State Medical University claims that 5G millimeter waves stimulate human DNA in a way that causes cell nuclei to produce, to create coronavirus.

So that's a kind of a strange and interesting. The authors, I will talk about the senior author a little bit later. So you could retrieve this paper, this article from PubMed. If you still can't, if you want, I can give you some copies and the article is very complex, very technical. So let me just read the first lines.

In this research, we show that 5G millimeter waves could be absorbed by dermatologic cells, cells of the skin, acting like antennas, transfer to other cells, and play the main role in producing Coronaviruses in biological cells.

And then it goes on. It explains everything. Again, very technical, very complicated. Now, I personally know the senior author. I don't know if you're familiar with this convention, but in scientific articles in the field of biology and medicine, the last author is the senior author. The one who supervises the group.

Doctor, actually, Professor Torreira Lotti used to work University of Florence, Italy, when I also was working over there as a full professor. He was a full professor of dermatology and is highly respected in the field of dermatology. He is president of the world health Academy of Dermatology. He has a number of awards.

He is a honorary professor in China, in Russia. He has been a chair of dermatology at Rome's Marconi University. And so, he is a scientist with hundreds and hundreds of peer-reviewed articles, very respected with extremely high reputation in the field of dermatology.

And here, dermatology is involved because, again, the skin works like an antenna. So what happened then? It happened that this article was taken by some websites that are kind of controversial, like InfoWars. They deal with a number of controversial topics.

And actually, this was the title: NIH ADMITS 5G CAN ACTUALLY CREATE CORONAVIRUS WITHIN HUMAN CELLS. Also, celebrities, they took these articles. This popstar suggested 5G link to coronavirus. Whatever the case, after all of this probably unwanted publicity, the editors of the journal retracted the paper.

So the paper is no longer available, not because the data were fabricated and not at all but for not better-specified manipulation in the peer review. So the paper is no longer available. And again, if you wish, I can send you and the audience some copies.

But let's say that the controversy still exists. I found very interesting this Ph.D. from Canada, Dr. Magda Havas, who did some very simple study that I

think everybody could do that is to compare the incidence and the mortality of COVID-19 in states of the United States that have already implemented the 5G and compared with states that have not yet implemented 5G.

So, as you see, same number of tests per million population, number of cases, number of deaths. She observed that the COVID-19 cases per million are 95% higher and 126% higher the deaths for COVID-19 in those states that have already implemented 5G.

Of course, we know very well that association doesn't mean causation. There could be hundreds of different causes explaining this observation. Now the data is real, but the interpretation, of course, is subject to a number of variables.

And as the doctor very honestly writes, whether these results are due to some factor other than 5G and whether this association will proceed as time goes on remains to be seen.

However, I would say that controversy aside, it is something interesting to monitor because we never know. COVID-19 is something completely new. 5G is something completely new. So at least for the sake of scientific curiosity, it is something worth monitoring.

Dr. Schaffner: Yeah. That's amazing. Dr. Havas does incredible work. So, I didn't realize she put that together, and yeah, as you said, it just continues to pose the question, and we have to look at this relationship with all the information you shared.

So, no, that's really interesting, Dr. Ruggiero. And as we've mentioned with your radiology training, you had to learn a lot about protection against x-rays and other forms of radiation in general.

And so, from that knowledge base, and then all of your research, how can we protect ourselves from really the ubiquitous EMFs that surround us right now?

Dr. Ruggiero: Well, this is something very difficult because to protect ourselves against the x-rays is relatively simple. You put some lead between yourself and the x-rays, and you're protected. Much more difficult is to protect ourselves from the ubiquitous EMFs.

We even have satellites that send EMF signals for communication. So even if you go to this beautiful place, which is the petrified forest in Northern Arizona,

still, you have a very strong cellphone signal. So it means that even there, you have EMFs. So how can we do?

We have to find some other way. Now, we described this new approach of ours in this article that can be freely retrieved from my archive, the preprint server for biology from the Cold Spring Harbor Laboratory, where we describe a novel method to protect ourselves using or, let's say, exploiting microbes that are part or may become part of our microbiome.

But first, let me talk about 5G again because, in this article, we describe the effects or the results of this approach of ours on a number of EMFs, including 5G. So, now I should be talking about 5G, not in relation with COVID-19, but in general.

Now, this is a very interesting article that was published in May 2020 by authors from United States, Canada, and Russia, and also Greece.

So, a multinational effort and in no ambiguous terms, they write: this article also presents evidence that the nascent 5G mobile networking technology will affect not only the skin — again, the skin because the skin is an antenna — and eyes, as commonly believed, but will have adverse systemic effects as well. Systemic means on the whole body. And most likely, the microbes are part of these systemic effects.

Now, this concern has also been taken also by a non-technical scientific publication like *Scientific American*. *Scientific American* is probably the most respected journal for divulging scientific topics. Even Albert Einstein, as you can see from Wikipedia, has contributed to *Scientific American*.

[20:05]

So I think we're not talking about the fringes, the conspiracy fringes of the internet. We are talking about what is called mainstream science. And in *Scientific American*, in October of last year, they write again, very clearly, we have no reason to believe that 5G is safe.

Now, if this is the case, then what we can do? Can we do something we think we can? And we even filed a patent application at the United States patent trademark office describing this technology of ours.

Now the title of this invention, if you want to call it so, is composition, methods, and rationale for the formula of a pre-probiotic dietary supplement.

So this tells you where we are. We want to develop a supplement, pre-probiotic, that is aimed at protecting the human body from the harmful effects of electromagnetic radiation through quantum entanglement of DNA repair genes.

So now it becomes complicated, but it's a patent application. We have to use technical terms. That are elicited by natural superluminal — superluminal means they travel faster than light particles — inducing photosynthesis through or via the Cherenkov effect.

What happens is sort of a light radiation that happens when particles travel faster than light in water, and this induces photosynthesis. So, I know it's very complicated. Again, it's a patent application. It is not something-- It is not a novel. So it has to be very technical.

Let's hope that the abstract is more clear. Now, the invention is related to a product called — the name is still classified — that is formulated with the goal of protecting the human body from the harmful effects of ionizing and non-ionizing electromagnetic radiations.

Examples of ionizing radiation targeted by this invention include, but are not limited to—[legalize]—gamma- and x-rays. Non-ionizing electromagnetic radiation includes but are not limited to radio waves such as those used for mobile telecommunication comprising the fifth-generation technology standard for cellular networks, also known as 5G.

So, essentially, we have developed a technology where we can exploit the ability of certain types of microbes to withstand enormous amounts of damage inflicted by EMFs, whether ionizing radiation or non-ionizing radiation, 5G, radio waves, whatever.

And then these microbes, they transfer this ability of theirs to quantum entanglement of DNA to the microbes of our microbiome, and in turn, these transfer this acquired resistance or ability to repair the damage to our human cells.

So, in this very indirect or [inaudible] way, our human cells become capable of withstanding the damage inflicted by EMFs. Did you know that some microbes can withstand enormous amount of radiations? That's something very interesting.

Dr. Schaffner: Yeah, no, absolutely. And that's really, as you are sharing a really unique approach that we can harness the power of these microbes that are resistant to these high amounts of EMF exposures and the harms of them.

And we can use the microbes to basically — again, I'm oversimplifying — kind of educate and share that resistance knowledge to our own microbes so then we can be more resilient to EMFs.

And so, I'm sure everyone's wondering how's it possible that these microbes are up to thousands of times more resistant to the lethal effects of radiation?

Dr. Ruggiero: Well, thank you for asking because this is-- No, for me being a radiologist is particularly fascinating. We found that some microbes that are called cyanobacteria.

And the cyanobacteria are interesting because they perform photosynthesis. That's why we use them in our approach. They are extremely resistant to the killing effects of ionizing radiation.

So these words, they come from that article of mine that I showed that is published in bioRxiv. *Arthrospira platensis* is currently used by the NASA or maybe even the Russian astronauts because when you are up in space, you are exposed to a lot of radiations because you're not protected by atmosphere.

And actually, the astronauts, they use these microbes. Now, this bacterium survives exposure to gamma rays — gamma rays are the worst, even worse than x-rays — up to 6,400 grays. Grays is a unit of measurement of radiations.

Now, to give you an example. The lethal dose that was computed from data on occupants of reinforced concrete structures in Nagasaki, Japan, that as we know tragically was bombed with the second nuclear bomb. Now, the lethal dose for humans is 3 grays.

Now, these microbes, they can withstand radiations up to 6,400 grays, so they are not even comparable to our human ability to withstand radiation. How can they do this? They have a number of molecular mechanisms that have been studied in detail.

First of all, they can reduce significantly the production of those reactive oxygen species or ROS that are responsible for the damage to DNA. Secondly, they are subjected to DNA damage, of course, radiation.

So they penetrate into these bacteria, and they cause a number of damages to the DNA, but they are incredibly efficient in DNA repair mechanisms.

So, they have the same repair mechanism that we have, but theirs are much more efficient. Now, this is what they do. I mean, they can live closer to the

volcanoes. They can withstand the worst radiations, and they survive. Now, the point is, how can we transfer this ability of theirs to our cells?

That's why we developed a technology that is based on phages. Phages or bacteriophages are viruses of bacteria. In most cases, they are not good for them because they kill them. But in other cases, they behave like the microbiome of the bacteria.

We have in our gut microbes and the bacteria, they don't have a gut, but inside them, they have viruses that can be very beneficial. And they're very important for them to transfer the information. This is an article published in *Science* that highlights the importance of viruses for our health of these bacteriophages, these healthy viruses.

So let's not make confusion. There are some viruses that are very bad. We don't want to meet them, but there are many more viruses that are truly important for our health.

As a matter of fact, these viruses called bacteriophages or phages have been used in therapy of human disease for more than a hundred years. That is soon after their discovery in 1915 when it was enthusiastically thought that they could cure almost any disease, in particular, infectious disease.

In those days, there were no antibiotics, and these viruses they killed the bad bacteria, the pathogenic bacteria, and saved the healthy microbiome. Now, phage therapy is only now in these past few years being rediscovered in Western countries, but it has been used continuously with no interruption in the country of Georgia, a former Soviet Union, and the Russian Federation.

And actually, they do sell commercial phage cocktails for decades, and they belong to the armamentarium of a common practitioner. So, essentially, we have developed a technology that has been published. This is one of our most recent articles describing the phage composition of this pre-probiotic of ours.

Now, these phages they are instrumental in transferring the resistance to the killing effects of ionizing and non-ionizing radiation from the *Arthrospira platensis* to the microbes of the microbiome and then to our cells. So, we have a kind of a talk towards way to exploit or harness the abilities of these microbes and to transfer this resistance to our cells.

Dr. Schaffner: It's a brilliant way. It's a very brilliant way. So these phages from the cyanobacteria are basically teaching our microbes of the microbiome how to protect us. Is that correct?

Dr. Ruggiero: That's correct. And then the phages, they also transfer the information to our human cells.

Dr. Schaffner: Is there anything else you want to share with us about that mechanism or how we can really create a more resistant or resilient microbiome to these EMFs?

[29:50]

Dr. Ruggiero: Well, yes, there is something that is a fairly new, and actually, we have not discussed this far. But first, let me go a little bit back on the effects of EMFs on neurology because we have discussed about cancer. We have discussed about viruses, but what about neurology? Do EMFs somehow cause damage to our neurological functions?

Unfortunately, the answer is yes. Again, all these are scientific articles you can retrieve from PubMed. For example, this one published in 2019 describes the effects of chronic exposure to extremely low-frequency EMFs, those that are used for mobile telecommunication, on sleep quality, stress, depression, and anxiety.

I think we all know that we shouldn't sleep with our cellphone next to our bed. And I mean, there is ample scientific proof that EMFs, they have very negative effects on neurology, in particular, on stress, depression, anxiety, and sleep quality.

However, something that is not very well known, at least not by the general public, is that they also affect our ability of dreaming. And you may think, well, in these days with COVID-19 and cancer and all these things, who cares about dreaming?

Actually, that's important, more important than most people think. Also, this is an interesting article published in the *New Scientist* describing our sweet dreams, that is, good dreams, not nightmares, are made of geomagnetic activity. Even the magnetic field of the earth is able to influence our dreams.

So think about those artificial EMFs that we are surrounded by. Now, again, you may think, well, who cares about dreams? We have many more dangerous, many more important things to deal with.

Well, if you ask Carl Gustav Jung, one of the two fathers of psychology, the general function of dreams is to try to restore our psychological balance by producing dream material that re-establishes in a subtle way the total psychic equilibrium.

So, according to Jung, and not only to him, dreams are essential for our psychic equilibrium. And if you want to go a little bit farther, again, according to Jung, we have forgotten the age-old fact that God speaks chiefly through dreams and visions.

So, dreams are an essential part of our psychological well-being. And the fact that dreams are negatively affected by EMFs is not a good thing. And this might reflect in a number of stressors. But in addition to sleep, anxiety, dreams, also EMFs, they affect memory.

And this is not a surprise because, in our brains, all these functions are closely connected. Now, this is another article published five years ago, where they described how EMFs seriously damage the physical and psychological health. And they propose electromagnetic fields as environmental contaminants. And in particular, in this study, they focus on the effects of EMFs on memory.

Now, memory is located in this area of the brain that is called the hippocampus. The hippocampus is a very small area of the brain that has been known for many years is where in particular long-term memories are formed and stored.

This is another article published in 2017 describing again the effects of short and long-term EMFs exposure on the human hippocampus. Why do I mention hippocampus? Because hippocampus is an organ, or let's say the part of the brain that I have been studying for many years. This article of mine was published in 1987.

So several years ago, in the most respected journal, a European Journal of Molecular Biology. *EMBO* stands for European Molecular Biology Organization. It is the most respected in Europe and one of the most respected in the world.

And here, we described the effects of a particular neurotransmitter that is called GABA, gamma-Aminobutyric acid, on the hippocampus as related with long-term memory.

So now we put together two or three things, a neurotransmitter, which is called GABA, which is an inhibitory neurotransmitter. The hippocampus that is where memory is formed and stored. Actually, I didn't publish only one article. I published two articles. This one was published in the same year in *Brain Research*.

Now, the GABA is the trade union because GABA is produced by the microbes of the microbiome, in particular, by certain microbes that we took care to integrate in our pre-probiotic approach. So, now we have microbes producing GABA.

And what can we do with all this information? Well, let's go back a little bit to the skin as antenna because if it is true that EMFs they work primarily through the skin and the skin is like an antenna, maybe the skin is an important organ to target with this approach of ours.

Now, who does say that the skin is an antenna? Well, we have already read in the paper by Lotti and colleagues that they hypothesized-- They show actually. They don't hypothesize.

They have data showing that 5G millimeter waves can be absorbed by skin cells acting like antennas, but we know this paper has been retracted part of the conspiracy theory. So let's forget about that.

But amazingly, they are not the only ones because, in 2008, this is long before any COVID-19, long before any InfoWars or conspiracy theories. These authors from the Hebrew University of Jerusalem in Israel, they published this paper clearly describing how the human skin is arranged in an array of helical antennas in the millimeter and sub-millimeter wave range.

And they are not the only ones. Again, *New Scientist*, that is a journal to divulge complex scientific concepts, clearly writes sweat ducts in the skin may act as giveaway antennas.

Our skin may contain millions of tiny antennas in the form of microscopic sweat ducts, says researchers in Israel. And then they go on. You can read the article. And again, the article was dated 2008, so no controversy here.

Skin cells, skin structures are antennas. This is more recent, 2018. In science, when you have a concept that stays there for 10 years or more, it means that it is true. Otherwise, again, it is retracted. It is disproved. It is ridiculed.

Now, this is still there because 10 years later, other researchers, again from Israel, they published this article entitled *The human skin as a sub-THz receiver – Does 5G pose a danger to it or not?* You read the article, but I think you can deduct from the title of what they mean.

Therefore, our approach now is to target also the skin. So not only to teach the microbes but also to use these metabolites of the microbes, the gamma-

aminobutyric acid, to target the skin because the skin is the antenna through which we receive the EMF.

In particular, the millimeter, sub-millimeter waves, and our approach combines the well-known property of GABA that I will describe in the next slide with a proprietary blend of Allantoin and Ambuk butter.

So we're talking about completely natural substances. Microbial (non-animal-derived) Chondroitin sulfate that serves as a delivery system, creating a unique proprietary delivery system, and all these things are combined. And they're designed to amplify each other's efficacy and counteract the effects of EMFs on body, brain, and mind.

Briefly, because you can find, you can read these things for yourself on Wikipedia or anywhere else, GABA is responsible for the calming relaxing effects of alcohol, barbiturates, benzodiazepine, Valerian, anesthetics.

In other words, all of these substances that are known pharmacologically or as food to calm, to relieve stress, they all work because they mimic the effects of GABA.

GABA is the real thing. Alcohol, barbiturates, tranquilizers are mimicking. GABA is also involved in synthesis of melatonin. So it affects the regulatory effects on sleep and reproductive functions.

Modulators of GABA receptors have shown clinical proof of concept as novel anxiolytics that are superior to the classic tranquilizers because they lack sedation and they have a much reduced or absent dependence liability. GABA is essential for memory. We published that in 1987. GABA is essential for eyesight, the so-called supernatural eyesight that we have during solar eclipses.

And besides the nervous system, GABA is also produced in insulin-producing cells of the pancreas, where it promotes replication and survival of the cells and has been proposed as a new treatment for diabetes.

[40:00]

And it has also been detected in other tissues of the GI tract, the reproductive system, the liver, and kidneys, where it participates in regulating physiological functions of these organs.

Now, all these now we can target through the skin because, again, the skin is like the antenna that receives the signals from millimeter and sub-millimeter radio waves.

And Allantoin, just briefly to describe another part of our approach is it synergizes with GABA because it protects against the induced cell damage by EMFs.

It reduces free radical activity. Now, the free radical activity, reactive oxygen species are produced as consequence of EMF exposure, and they are associated, again, with a number of neurological disturbances that include anxiety, poor quality of sleep, poor quality of dreams.

And so, Allantoin helps in this. It positively affects the cognitive functions, increases neuronal cell proliferation of immature neurons in the hippocampus, again, and thus, it contributes to learning and memory, and in this respect, it synergizes with GABA. It has memory-enhancing effects up to the point that it is proposed as a treatment for Alzheimer's disease.

So, now, here we have a two-pronged approach. On one side, we teach the microbes of our microbiome, starting from the gut, to withstand the effects of EMFs and then to transfer these abilities to our cells. And then, we target the skin because the skin is where the antennas that receive these EMFs are located.

And we target the skin. One of the products of the microbes that is GABA and this produces the incredible effects. We already have clinical evidence on the quality of sleep, on stress, anxiety, and most interesting on quality of dreams.

Dreams have become more numerous, more vivid. People have reported to smell things, to see vivid colors, and according to Jung, these are very good positive signs because they direct towards psychological equilibrium.

So to conclude, and then I'm open to discussion, we will love to live in some etheric place as this one far from 5G towers, far from Fukushima type of radioactive pollution, far from any type of environmental pollution, including EMFs.

Unfortunately, we can't. We live surrounded by cellphones, like the first cellphones that is kind of a protasis of mine. And all of us, we live surrounded by wireless. Otherwise, I couldn't be talking with you right now. So we live in this environment. This is an environment that we have to live with.

So, we cannot shield ourselves from all the EMFs. And therefore, the best thing to do, in my opinion, is to exploit what nature offers us to protect ourselves from the harmful effects of EMFs. And I hope I've been able to convey this message. And of course, I am open to any question you may have.

Dr. Schaffner: Yeah, that was excellent, Dr. Ruggiero. And I love the beautiful pictures you've been putting throughout your presentation. They're really lovely. And yes, not many of us can experience such a beautiful place. And I agree.

I mean, I think it's just the reality. There's going to be just increase in exposure until potentially we look at other forms of technology to be more biocompatible with our biology.

So we have to continue to figure out how to support our resilience to these things. And yeah, I think this is a really innovative solution, and yeah, my mind is really open to all of this.

And one thing when you're talking about GABA to all of the health improvements or the health effects of GABA, but in my little research around GABA too, I've seen that it helps with the aquaporin channels in the astrocytes for the lymphatic system.

So, you've done such incredible work with developing products around the lymphatic system and enhancing the lymphatic drainage in the brain. And I wonder if that's also another effect of GABA. Have you thought about that?

Dr. Ruggiero: Yes. We have thought about that mechanism. The technology with GABA was born out of the desire to counteract the effects of EMFs on sleep, anxiety, stress, and dreams.

But then, as it opened up, since we used some concepts that we had successfully used in the past, we have noticed that it also helps a lot with detoxification, I would say. So through the lymphatic system, but not only through the lymphatic system, but also through the skin.

So, it helps a lot, and it is a very good complement to other approaches that we have. However, this GABA approach is quite unique as far as these kinds of subtle psychological effects are concerned. So we're talking about mood. We're talking about waking up in the morning with good optimism that is truly needed in these days.

And so, all these effects that to find something that mimics the effects of alcohol and tranquilizers without any of the side effects of those, I think it's

something very interesting. And again, we used, we exploited our expertise on-skin technologies.

We had worked on skin electroporation that is using electric current through the skin to study skin impotence and all these technical things. So, we put all this expertise to work, and I think that we now have an approach that is truly unique and truly fascinating.

We are even working on some fringe or, let's say, border types of science to see whether this approach could truly open the doors of perception. And I won't say anything more.

Dr. Schaffner: That's really exciting in that a lot of my community also explores those either through plant medicines or other natural substances to open our minds to understand. You just have a fresh perspective of how to navigate the stressors of our time.

And I guess, one, I'd love for you to just maybe briefly because you've done such incredible work with us not only on the glymphatic system but also many people, it's still a new concept to understand the role of the interstitium and how that is.

We use something topically through the skin, and it has all of the powerful effects that you just shared because of all the mechanisms.

But also, we can think of this like systemic effects through the absorption and the delivery through the interstitium and then how that can also be a transportation highway to get these nutrients and these compounds in the body to create a systemic effect. Are you thinking about that mechanism as well as you use these topical treatments?

Dr. Ruggiero: Yeah, absolutely. The interstitium has been dubbed a new organ. Actually, it's not an organ like the liver or the heart, but it's an important part of our human anatomy. And this is a kind of a holistic approach, also very microscopic, very anatomic because it truly connects everything.

So, essentially, all our tissues, all our organs, all our systems are interconnected physically by an incredible array of very small tubes or tubules that physically connect all organs and tissues, and this interstitium starts at the skin, at the skin level.

So again, the skin is the interface, another big discovery. I mean, this has been known for millennia. The skin is the interface between our bodies and our minds, now we know, and the environment.

So the interstitium begins at the level of the skin. And from there, it connects everything inside our bodies, from our brains to our kidneys and organs and systems you can denominate.

Now, if you are able to penetrate the interstitium, and this can be done now thanks to this proprietary new delivery system, then you can reach all parts of our bodies.

And so, that's the concept that we use. We have already used with other technologies that you have been applying for the past two, three years. I hope we've good success from what I can hear.

And of course, we use the same approach with this GABA approach. This GABA approach also works on the skin because, again, the skin is where the antennas are located, but then, of course, it diffuses all over the body.

Also, working with the skin and skin impedance and all these technical things about skin, we have learned a lot in the past decades, and now we can truly use the skin to target the rest of the body.

[50:00]

Think of acupuncture. I mean, nobody doubts the acupuncture work. It works in a number of different ways, but it works through the skin, actually through the nerve termini in the skin, but still, it works from the outside, and it has enormous effect inside.

Well, our approach is not as acupuncture. We don't use needles, but we use a very similar concept. So I was mentioning *The Doors of Perception*. If you read the original writings, you will find out that at the end, everything is connected.

Well, in our limited knowledge, everything is connected through the interstitium, these little tubes, and we have, let's say, broken the key, or we have found a way to exploit these intricate nets of connections to re-establish balance, to re-establish equilibrium that quite often is disrupted by EMFs.

Dr. Schaffner: Thank you for explaining that. When I try to continue to understand my knowledge base of how everything's interconnected and travels in the body, I keep coming back to the interstitium and the extracellular matrix and how all of these things are interconnected.

And so, no, you always give a great explanation about that, Marco. And this was an absolutely fabulous presentation. You gave people a lot to think about and a lot of resources where people can go and check out these ideas or this information and continue to form their own opinions.

You've showed your first paper. It was 1999, right before the iPhone, before 5G. And so, it's like, this is something that-- I'm glad that you've had so much knowledge and understanding to now develop an empowering solution so people can have less fear and more resilience and sleep well and have less anxiety and depression.

And we can still live a very beautiful full life even though it's stressful out there. So, thank you so much, Dr. Ruggiero. Where can people find out more about you, your work, and all of these wonderful ideas?

Dr. Ruggiero: Well, I think you can give people all my contacts. I'm not a very private person. And I think in the first slide, let me see if I still have it. Bravo-europe.com, but again they can contact you, and I should be happy to answer any questions that anybody might have.

Dr. Schaffner: Great. Well, thank you so much for your time. It's always an excellent presentation, and I will be digesting all this information as well. And again, I can't thank you enough.

Dr. Ruggiero: Thank you, Christine. It has been a pleasure, honor, and a privilege. And I hope that we shall have many more opportunities like this in the future.

Dr. Schaffner: Absolutely.