



Episode 475: Jeffrey Smith on The Existential
Threat of Gene Edited Microbes

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Katie: Hello and welcome to the "Wellness Mama" podcast. I'm Katie from wellnessmama.com and wellnesse.com, that's wellness with an E on the end. And this episode is about a topic you might not have even heard of, but that could have an extremely negative effect on your life. We talk about the existential threat of gene-edited microbes and what that even is. I'm here with Jeffrey Smith, whose name you may know, he is a leading spokesperson on, "The Health Dangers related to GMOs." He has authored two global best-sellers, directed five films along the same topic, delivered thousands of lectures and interviews in 45 countries, and has organized grassroots and governmental initiatives around this.

And he's now talking about some serious and potentially irreversible hazards from some new genetic engineering techniques that, as he delves into in this episode, can lead to health and environmental catastrophes that may not be reversible. He leads the global Protect Nature Now coalition, which you can find at protectnaturenow.com, we'll talk about that in the episode. But this is a must-listen episode to understand some of the emerging technologies and how they could profoundly impact plant life on Earth, the climate, and even the future of diseases. So, very, very fascinating episode and definitely worth the listen. And without further ado, let's go join Jeffrey. Jeffrey, welcome back.

Jeffrey: Thank you, Katie. Good to be back.

Katie: Well, I'm excited to chat with you again, although I'm a little nervous about the topic because every time you come you shed light on something that makes me much more aware of something I didn't know before and I have a feeling this episode will be very much the same. People may be familiar with you from your work with GMOs. I know you've been doing this for a very long time, you've been on here before to talk about genetically modified foods. And from our talk offline, you're now pivoting and raising awareness about what you're saying is potentially a much more dangerous threat. So, to start broad, can you just give us a broad overview of what we're talking about when it comes to gene-edited microbes and what that means?

Jeffrey: Sure. Well, we've talked about genetically engineered soybeans and corn and the Roundup Ready crops, etc. And I hope a lot of your listeners know how important it is to eat organic. And we can perhaps review some of that later on, but the thing that we're focused on now is microbes that are genetically engineered, and it turns out to be an existential threat. Many people now know that the microbiome inside our gut is critical for human health. Eighty percent of chronic diseases, supposedly have their source in an imbalance in the microbiome, we outsource 90% of the daily functions to the microbiome. In fact, we rely on the 3.5 million genes of our internal bacteria, viruses, etc., as part of our database, so we don't have to have higher organisms just with 22,000 genes of our own, which is less than an earthworm.

But it's not just us that rely on the microbiome for its health, in fact, ecosystems, crop systems, forests, even in the atmosphere, the weather, all rely as a foundation on bacteria, viruses, algae, fungus, the little guys. And what's interesting is that when you release a genetically engineered microbe, it can travel around the world. We didn't need a pandemic to know that microbes can travel, we didn't need to know that they mutate, but most people don't realize they can also swap genes, they go to these big swap meets and share genes with other species. So, if we were to introduce a genetically engineered change, in a particular microbe, it could theoretically end up in ecosystems around the world, and inside of us, causing damage and even collapse ecosystems with potentially catastrophic effects. And it's not just theoretical, we've had some near misses that could have been cataclysmic.

Katie: Wow. So, this is a very new and emerging thing, like, this is the first I've really heard of it, and I'm in the research world very often. I think top of mind question would be, is there a connection to what we've seen over the last couple of years?

Jeffrey: Well, it's hard to know what influence genetically engineered microbes have had on the microbiome because so few of them have been released purposefully. What we see right now is a damage of the microbiome in the world because of things like Roundup, which is an antibiotic, the overuse of pesticides, in general, the overuse of antibiotics. The amount of diversity in the human gut is a fraction of what it was a few 100 years ago, and our health is suffering. We see changes also in the new generation with one-third of births being C-section, it has a whole different microbiome that gets inoculated into the children with health consequences that can not only last the child's life but also to the next generation, because it may be passed on to future generations. So, we're seeing the influence of the microbiome in many ways, but what we want to protect is introducing elements that weren't part of the evolution, the coevolution, really, of our bodies and of systems with the microbiome.

And as we're going to talk about this, the level of intelligence is awe-inspiring. What the microbiome does, what it's capable of doing is mind-bending. And we have the ability to destroy that, and we're not paying attention to that. And as it's important to understand, genetic engineering has become so cheap and easy. You can buy a do-it-yourself gene-editing kit for \$169 on Amazon, and create new genetically engineered microbes. And if you pay a couple of thousand dollars, you can have a big lab and bring in new items for the price of dinner and genetically engineer a microbe every day. And large companies have automated facilities with robots that can produce thousands and tens of thousands and hundreds of thousands of combinations. So, over the next generation, if we're not careful, we will be introducing massive amounts of GMOs, in particular, of microbes, which could destroy us. And I can give some examples of near misses that are rather breathtaking.

Katie: I would definitely love to hear some of those examples, but just to clarify, so when you first came on the podcast, you talked about how genetically engineered foods through eating them can have a really profound impact on our gut microbiome and change it drastically over time. But what we're talking about now is something even more profoundly impactful than that, right? So, what would be some examples of maybe some of these things that we've nearly missed?

Jeffrey: Well, at the website, Protect Nature Now, is my latest film called, "Don't Let the Gene Out of the Bottle." It's the shortest film I've made, it's just 16 minutes because I felt that I needed to get many, many people to watch it, to kind of raise the alarm about this. And I introduce Dr. Elaine Ingham, who was a professor at Oregon State University, and her graduate student who was getting his Ph.D., got permission from some scientists to do research on a genetically engineered microbe. It was designed to turn plant matter into alcohol. And normally this particular bacterium lives in the root structures of all the plants on the planet. It's called *Klebsiella planticola*. And it has its own function, but they genetically engineered it. And it was a very well-meaning concept. They wanted to give it to farmers, so instead of burning the crop residues on the field, the farmers would rake it up, put it into big barrels, add the bacteria, and within two weeks, it would turn to alcohol. They open the spigot, they end up with alcohol to run their tractors, to sell off-farm. And the nutrient-rich sludge at the bottom was to be spread on the fields as fertilizer. And they were about to release this into the environment to see how quickly it would spread as one of the experiments, and had already passed all of the Environmental Protection Agency's requirements. And so it was set to go.

But this one graduate student, he just wanted to do research on it for his Ph.D., he got permission to, and on a Saturday, he walked into his laboratory. And he had taken that nutrient-rich sludge, mixed it with soil, and planted wheat seeds there, and compared to controls, and he came in and all of the wheat seeds of the GMO side were turned to mush. They were just slime. And he thought he made a mistake, but what happened was the nutrient-rich sludge turns out to still have active bacteria. So, it turned the roots into alcohol and turned the crops into alcohol, causing a slime. Now, they were about to release it two weeks later in the environment to see how far it would spread. And Elaine Ingham, when she started talking about the dangers of this particular genetically engineered microbe, people from the EPA quietly approached her. And these were whistleblowers. And they said there was a secret study that the EPA has never acknowledged out loud, but

they knew it because they were participating in it. And that the EPA released genetically engineered bacteria, different type in a field in Louisiana to see how far it would spread, and it eventually spread around the world.

Now, I asked Elaine in this film, "What would be the consequences if this genetically engineered bacterium spread around the world?" She said, "It could end terrestrial plant life." End terrestrial plant life. Because all of the plants die in the presence of alcohol. The bacteria itself doesn't die in the presence of alcohol, but its natural counterpart, what it was derived from, that can die in the presence of alcohol. So, this genetically engineered microbe could theoretically replace it and take up residence around the world. And we have no technology to recall it, to eradicate it, to even identify where it is. And so this would have been beyond catastrophe. It could have been a cataclysm. And that's one of three examples of the microbes that are genetically engineered in our short film.

Another one could have changed weather patterns. A third was a potentially pandemic pathogen. It was an avian flu, which was very, very deadly, but very hard to catch. People who got it, just a few 100 people, had to be around birds for a long time. And then they caught the avian flu, and more than half died, more than half died. It was a 52% death rate according to some statistics compared to the current pandemic, that's many, many times more. And genetic engineers in a laboratory, made that H5N1 flu airborne. This means that if it had escaped, it could have decimated the human population with a pandemic far greater than anything we've seen. And this was such a shock to scientists and politicians, that in 2014, there was a partial moratorium of this type of research, called gain-of-function, but it was lifted in 2017. So, that's an example of one genetically engineered microbe that could create a pandemic for human health. And then we have an example of a microbe that could have created a kind of pandemic for plants. And then we have another one that could have potentially changed weather patterns. So, you get a sense of how powerful the microbial world is, and how we shouldn't be messing it up with good ideas that can spread and create disaster.

Katie: I feel like two really important points there is, because I think we'll run into some people who are like, oh, these are just conspiracy theories. But to your point, these were developed with good intentions. It's not like someone was sitting around in a dark lab trying to figure out how to destroy humanity. They were working toward what they thought was a good goal, that still doesn't take away from the potential danger that these things were. And also to your point, it seems like anytime you're messing, we know this with the gut, anytime you're messing with the microbiome, it can have really, really long-lasting effects and be very difficult to undo. And so it would make sense that at a worldwide scale...there's truly no way kind of, I guess, to the title, to get that gene back in the bottle. Like, if these things got out, to your point, do we really not have any way that we could contain them at that point?

Jeffrey: No, not really. I mean, the thing is, if you act quickly after a release, like for example, the one that nearly changed weather patterns, and I have to say in the film, and now, we don't know if it would have changed weather patterns, we don't know if the other one would have ended terrestrial plant life. They are plausible possibilities based on their characteristics. But we can't say, for sure, but we don't want to try and find out. So, in the case of ice-minus, there was a genetically engineered bacteria that was to be sprayed on potato fields, and on strawberry fields to prevent frost damage. There's a particular bacterium which turns

water moisture into ice at much higher temperatures than it would normally form. And so they wanted to reduce the frost damage by replacing the natural bacteria with a genetically engineered version that simply doesn't do that, an impotent version.

And they actually sprayed it on a field but then a court order required them to incinerate it. So, they took all the soil and steamed it, and killed it. And so in that sense, they may have caught it before it got away, but it was very, very quick. Now, we know that that particular type of bacteria is used in the atmosphere to turn moisture into raindrops, and into snow, and into ice. It's even used in snowmaking in ski slopes. So, if this impotent version had displaced its natural one, and became the dominant species on the planet, then the weather patterns could have theoretically changed because it wouldn't have caused the raindrops to come from that level of moisture. So, that's an example, again, it was to save millions of dollars in frost damage. Now, it could have also allowed weeds to survive that normally get killed because of frost and they could have survived and created superweeds. So, we're changing things when we don't have a full systems understanding. It's very narrow thinking. And with microbes, even if we take the absolute state-of-the-art understanding, we are still babes in the woods.

Most of the microbes we haven't characterized, most of them we're kind of in awe of when we realize what these things can do. For example, in the second trimester of pregnancy, there's bacteria that move into the birth canal that digests milk. Why? Because it inoculates the baby during the birth process so that the baby can digest milk. The mother's milk then gives even more microbes. And so about 29% of the gut microbiome comes from the breast milk, and another 10% comes from the skin on the nipple. But when the baby needs a change in the quality of the milk, its microbiome in the saliva feeds back information through the breast to the mother and changes the structure of the milk that the child receives. Also, a significant percentage of the breast milk is indigestible by the baby. That's because it's not designed for the baby. It's designed to feed the microbiome.

All this is so important because it sets up a healthy microbiome, which can determine health for that child for the rest of that child's life, and then possibly the next generation. If there's a disease, like a tumor in the breast, certain bacteria go into the breast to contain it. Alzheimer's, in the brain, causes certain fungus to go into the brain to help. If we reduce the amount of microbiome in the brain, according to my interview with Dietrich Klinghardt, our IQ goes down. He thinks that, in some cases, the herbs that we eat may, in fact, have their power because of the microbiome that live on the herbs. And so if we think about these as like a micro Jedi army that's here for our benefit, and for the benefit of the world, we don't understand it. A microbiome can cause us to want to eat a cupcake. If we're doing an activity that it likes, it can trigger the reward center in the brain training us to feed it, training us to improve its diversity, all of these things we're just understanding, and yet, we are already going out there and making changes in the microbiome, releasing microbes that could affect ecosystems around the world.

Katie: And I guess this is very much the double-edged sword of technology because anything like this, I'm sure there is a potential for it to help, but also, like, you've just pointed out a very real potential for it to cause a lot of unintended consequences. I guess, A, how are governments allowing things like these to be experimented

with when we're so new to this kind of research? And what can we do to help guard against some of these really extreme consequences?

Jeffrey: Thank you. The success of the biotech industry's GMOs was thwarted when groups like ours, the Institute for Responsible Technology, and others, exposed their myths and misinformation. They claimed when GMOs were introduced, that it was safe and predictable, and did not need regulation. And we pointed out through the years that it's unsafe, unpredictable, and that the regulation that was created was insufficient. Because of that, 51% of Americans now believe that GMO foods could cause health problems, and 48% of the world's population believes the same. Now, this was... It's accurate, that GMOs are dangerous. It's accurate what people are suspecting or believing, but the biotech industry lost a lot of money when we conveyed that, those true points. So, a few years ago, they decided that their main goal would be to introduce new types of genetic engineering in such a way that they can convince the government and also consumers that it wasn't genetic engineering at all, that it was basically a more precise type of breeding, and they call it gene editing. They claim falsely that if it doesn't bring in foreign genes from another species, it shouldn't be a GMO at all, it's gene editing. They claim it's same words, it's safe and predictable, and doesn't need regulation. But they're more organized now than they were 25 years ago, and they actually have convinced governments, United States, Japan, Argentina, Australia, Brazil, that gene editing does not need regulation.

They're trying to convince the Canadian government now. They're trying to convince the UK Government. They're trying to change the laws in the EU so that if you want to introduce a gene-edited microbe, plant, animal, food, you never need to tell anyone. You can do it, no one will know. The government doesn't have to know, consumers don't have to know.

And what's tragic is that gene editing is extremely dangerous. It can cause massive collateral damage to the DNA, creating allergens, toxins, carcinogens, changes in nutrients. Its influence can affect generation after generation, in one case, up to 10 generations of mice were affected when the parent mouse was gene-edited. It can create all sorts of problems that are not even being looked at now or being understood when it's discovered, and yet, it's being given a green light. Now, you combine that with a couple of other things.

When you release a gene-edited GMO, and they are GMOs, you can't recall it, whether it's microbe or an insect. It can become a permanent part of the gene pool. And the most common result of genetic engineering is surprise side effects. So, now you have cheap and easy gene-edited products available, basically, to everyone in the world. They can be permanently part of the gene pool, and they're prone to side effects. What is needed now urgently, is very, very strict regulation, and education. We need people around the world to know that we're actually threatening to end biological evolution as we know it, by making these changes, by introducing manmade changes prone to side effects that will be inherited by all future generations.

So, what can we do about it? That was your question. When I was focusing on genetically engineered foods, I didn't have to engage with governments because consumer spending changed everything. When so many people were concerned about GMOs, their purchasing dollars affected what the food companies were willing

to make as GMO. Now, purchasing dollars is not going to stop the release of genetically engineered microbes, or insects, or grasses, or trees. So, we have a plan called Protect Nature Now at protectnaturenow.com, where we are going to introduce legislation around the world, both in individual countries and in international treaties. And we're going to focus right now on the most dangerous kingdoms for gene editing, which is the microbiome, bacteria, algae, fungus, viruses because that's where you can see massive damage in a short period of time that can undermine basically all living systems.

So, on our site, you can see the film, "Don't Let the Gene Out of the Bottle," but you can take action, you can go to an Action Platform, where when you enter your address, all of your elected officials show up. And in a single click, you can send them a letter and an educational packet. Right now, we have one packet, next week, it'll be a different packet, we've had two other packets, we're doing multiple educational campaigns to elected officials, and also to media in your area. So, whether you're in the United States, or Canada, or Australia, or the EU, or the UK, if you enter your information, your elected officials and your media show up. And it turns out, it's having an effect. Right now, we're hearing from people on Capitol Hill that they've heard from us and are interested in moving forward. So, in order for us to move forward, we need to build a bigger click and send Revolutionary Army, we need to demonstrate online support. And when we have enough, we're going to start introducing the bills that we need that support to pass. And we're going to do it in all the major countries. And we're going to do it in the international treaties.

Katie: And I will make sure those links for all of you guys listening are at wellnessmama.fm, and the show notes so that you can find them and keep in touch with that. I mean, I feel like we already have a lot of sobering statistics and some perspective on this. But I also realize how rapidly technology is moving and how quickly we've gone from these things even being possible to it just being food, to now we're talking about literally the core microbes of the planet. What is the future of this look like if we don't stop this right now and don't regulate?

Jeffrey: A friend of mine talked to an elder, an indigenous elder in the early '90s, who said around this time, we had a threat to end the biological evolution as we know it, and we needed to do things to protect it. So, I've borrowed that phrase from this indigenous elder ending biological evolution and switch it up so that we can safeguard biological evolution as we know it. It's hard to know what the future would look like with completely unregulated gene editing. I can give you some examples from health.

There's a mushroom that was gene-edited so that it wouldn't turn brown when sliced. They sent a letter to the United States Department of Agriculture saying, "Do you really need to regulate us?" And the USDA said, "No, you're gene-edited. You have no foreign DNA that bothers us. We don't need to pay attention." The FDA didn't need to look at it, the EPA didn't need to look at it. So, this company could introduce this mushroom without anyone knowing. Now, they used gene-editing to do what's called a gene knockout, where you cut the gene in such a way that it doesn't function anymore. And there was no indication that once they did this knockout that they actually tested to see if exactly what they wanted happened. But years later, someone did research gene knockouts in the lab, and looked very carefully at the sequence and the amount of protein that was still being produced and said, oops, one-third of the time, it fails, one-third of the time, it doesn't stop the gene from

producing protein. But some of the times when it produces protein, the proteins are miss-shape, and they're truncated, they're different. Those can be toxins, those can be allergens.

We don't have any indication that the mushroom people ever tested to look at the proteins, all they were looking at to see was when they cut the mushroom, did it turn brown? It didn't turn brown. They had confidence in the gene knockout, so they were going to put it on the market. If they did, people could die, people could get allergies, people could get diseases. If we think about multiplying this by thousands of food products, and then you find that some people will edit other things that are already edited, which will then be added other edits. So, we'll make multiple changes in the gene pool of our food. Then when we think about the microbiome of the soil, so critical for health, it's so brilliant. We're already destroying it by putting roundup on the ground and other pesticides that kill the microbiome. And we've seen that that reduces the health properties of the plant, and the health properties of the soil, increases soil-borne pathogens, etc.

Now, multiply that by adding new traits that have never been part of evolution. We have no idea if we're going to create droughts, if we're going to collapse ecosystems and rainforests, in inverted valleys, changes in the atmosphere. And then there's the human microbiome. It is so critical that we protect our microbiome. It is so brilliant, the amount of information that's programmed into the microbiome may be best described in what is called a fecal transplant, which is literally taking bacteria from one person, fecal matter, and inserting it into the gut of another person. It turns out, you can transfer health, and you can transfer disease, both human models and animal models. If you take a person or an animal that's overweight, and you take the fecal matter, and you put it into someone else, that person can start gaining weight or losing weight, or they can have a disease that the donor gave.

It's as if the microbiome has all of this information about our health, and that can be transferred and reprogram it to someone else's. And this co-evolution happened over millions and millions of years, where we've outsourced things so that, for example, we have nothing in our body to tell our own body, oh, this particular cell in the intestine needs to be replaced because it's damaged. That's the role of the microbiome. It monitors. It's part of our digestive system. It's part of our immune system. It's part of our detoxification system. And if we start introducing new elements, like they have probiotics that are genetically engineered for releasing in fields for agriculture, but they're not figuring out what would happen if that ends up in our gut, or in a desert, or in a rainforest.

So, we're talking about the potential for millions of GMOs to be introduced over this generation with potentially catastrophic consequences. So, it's kind of like we have to do this. It's not really what if we fail, it's like, we can't fail. This is an existential threat. When people hear about this, they immediately elevate it to the level of climate change. Some say more, I don't really want to have a competition between gene edited microbes and climate change, but we know that one of the ways that carbon can be sequestered is through the soil. And the microbiome of the soil does the heavy lifting. So, if we introduce something that changes the way that the soil can sequester carbon, then we're also contributing to the ongoing carbon crisis in the air. So, all of it is related.

Katie: I'm so glad that you brought up fecal matter transplant. I've seen some of the data about this. And I think that perfectly illustrates just how important microbes are. And it's really fascinating. We're seeing, like, to your point, weight gain, weight loss, metabolic changes, but also, they're using this now to help reverse autoimmune disease, like it's so, so impactful, that just changing the microbes, even in just the lower part of the gut, seems to impact in a cascading fashion the entire body. And so when we look at something in a whole system like that, it makes complete sense that if you hit that one trigger, it can create such a lasting effect, then doing the same thing on a planetary scale could be really, really, either dangerous or good, but we don't know yet. And that seems to be the really important key is that we don't have enough data to do this safely. So, regulation becomes super important. And unfortunately, it seems like that does have to happen at a worldwide governmental level to be effective. But it also makes me wonder, for those of us listening as moms and parents, for our own families, is there anything we can do to protect ourselves and our families on a smaller scale?

Jeffrey: Absolutely. First of all, as my friend Michelle Perro says, was a pediatrician, you have to love your microbiome. And so by loving and protecting your microbiome, what it means is eating organic because a lot of the foods in the United States are sprayed with Roundup herbicide, which is also patented as an antibiotic. But it's worse because it's not like most antibiotics, it selectively kills the beneficial bacteria in our gut. If you look at the human gut models that were fed Roundup, it turns out that they make changes in the microbiome, which could lead to dozens of diseases, from autism, to IBD, to brain fog, all of these different diseases and conditions are promoted, according to the experts, by the changes in the gut microbiome that's exposed to Roundup. Roundup is not allowed to be sprayed on organic foods. And so it is sprayed on most GMOs, but it's also sprayed on oats, which are not GMO, and wheat, and lentils, and mung beans, and it's found in wine and orange juice and whatnot. It's pervasive in agriculture. It's used just before harvest to spray down and dry down and kill crops, forcing fast rapid ripening of a lot of grains and beans. And so, in order to avoid that, you can go to our site, we'll give a link where you can actually get test results of which products have high levels of Roundup residues. It's called glyphosate, that's the chief poison, and which ones have low. And you'll find that all of the organic ones have quite a bit less or no detectable levels.

Now, if they're not allowed to spray glyphosate, why would it have any? Well, glyphosate, from Roundup is sprayed so many times, in so many places, that it's actually in the air, it's actually in the rain. It's in some cases in the water that can be sprayed onto plants. So, it's possible that even if you don't spray Roundup on your crops, you might have a small amount. But if you do spray glyphosate, it's going to drive into the plant, you can't wash it off. So, avoid crops, avoid food that's been sprayed with Roundup, and avoid the GMO foods. You can do both by eating organic.

And then, don't use Roundup on your property, don't use the pesticides around your property. And then go to Protect Nature Now, to participate in the solution in a bigger way. It just takes a couple of minutes to click and send a message. You can also customize and spend more time if you want, but to send a message to your elected officials, to your media, and put it onto your social media. Because you're right, Katie, that we need to get the governments to act, but I know from personal experience that government policy can flip flop. I

remember being flown to Poland by the government in Poland. I gave a press conference with the Minister of Environment praising their non-GMO position. A week later, there was a new government voted into place that was pro-GMO.

I remember sending my books and materials while I was in Thailand to the ministers there and they voted that they should not allow genetically engineered crops even in field trials. Ten days later, a new government came in and allowed GMOs in field trials. So, we have to create an understanding. Everyone in the world knows about climate change, almost. And we also know logically you never give a trigger for an Atomic Bomb to a baby and say, "Oh, don't hit that yellow button." We know that's so obvious to everyone, but what's not obvious is don't give a gene-editing kit to someone where they can release a GM microbe that could survive in the wild. People don't know that yet. It has to be in curriculum. It has to be in books, in magazine articles, in movies, in TV shows, in popular culture. It has to be spoken by the politicians, but understood universally, that we now have a new responsibility because of the new technology, the new technology could damage all living beings and all future generations.

So, humanity must step up to become protectors of all living beings, and all future generations. And that is a requirement of our survival. So, actually, it turns out that the threat has the opportunity to give us all as humans a wider perspective and a new relationship with nature. It's demanding that we not be an isolated kind of commanders of nature where we just dictate. It's requiring that we have a more humble position, and be stewards in order to survive. So, the upside is magical because we haven't had that since the indigenous peoples ruled. And they understood that connection, it's been largely lost, we need to re-establish that relationship.

Katie: Yeah. You're so right, that education is such an important key there. And I feel like I'm pretty well-versed in this world. And this is a new thing for me to learn about. And one with extremely, like, we've already illustrated, potentially very dangerous consequences. So, I'm glad there are people like you educating about this, and to talk about glyphosate as an example, obviously, much less profoundly impactful than some of these other ones you mentioned could be. But I know from a friend who runs a wine company in the U.S., they lab test all the wines that they sell, and they won't sell any with glyphosate residue, they can't sell any U.S. wines, because even the ones that don't spray it, they find traces of glyphosate in the wines. And so that was a thing that they thought was safe and got pushed through and is now widely used, and has, like you said, it's in the water, it's in the air. It's impacting all of the foods that we grow in our country, even the ones that it's not used on. And we're talking now about things that have that same potential but on a much more threatening, larger scale.

This episode is brought to you by Four Sigmatic... the mushroom superfood company I've been raving about for years! They have many products that have become beloved staples in our home, but a few I love most are the Lion's mane coffee packets for the morning, and their reishi elixir packets before bed to help with sleep. I'm also really enjoying their protein powder right now. They have a peanut butter flavor that's delicious on its own blended with water and is packed with beneficial mushrooms. I often make a protein shake on busy mornings or after a workout and love the convenience and brain/energy boost. Check out my favorite

products and all of their products by going to foursigmatic.com/wellnessmama and use code `wellnessmama` to save 10%.

This episode is sponsored by Wellnesse, that's Wellness with an "e" on the end... my all-natural personal care line. Our whitening toothpaste is a mineralizing blend of natural ingredients that supports oral health naturally. It's based on the original recipe I developed over a decade ago and has been through almost a hundred iterations to create the best natural toothpaste available. Many types of toothpaste contain ingredients you might find in paint and that you certainly don't want in your mouth, but ours is enamel friendly and oral biome friendly to keep your teeth and gums happy all day long! Check out the whitening toothpaste and all of our products, including our natural "hair food" haircare at Wellnesse.com.

And so I think you're right, education is so key. And I hadn't really thought of it in that sense, but you're right, it has that beautiful potential to unite the world in a really unique way, starting with education. And like any change, I think you're right, it has to be that both/and not either/or, we need regulation, but we also need all of us taking action on a smaller scale in our own communities, in our own families. And that's when we see any kind of societal shift is when we can unite those forces for good.

Jeffrey: You know, it's kind of like, in traditional cultures, people kind of spoke for the plants, they spoke for the animals, there was a certain way of greeting them before different meetings. The Iroquois nation had the words to say before anything else is said where they invited the different kingdoms in. And we have an opportunity now to speak for nature, to be the nature whisperer, to be the bacteria whisperer, to be the virus whisperer, to share stories and understandings. And so it's something where, when we're talking about the microbiome, it is now so established, it's established in terms of state-of-the-art understanding, because there's been over 50,000 studies in 5 years, linking the health properties of microbiome to human health, but it's not yet implemented as this society hasn't yet learned the lessons. So, we can all be the teachers and represent what we know to others on our social media, etc., sharing the film, that little 16-minute film, "Don't Let the Gene Out of the Bottle," it immediately creates a sense of, "Oh, my goodness, what do we need to do?" And people take action. So, we invite people to participate by sharing that from Protect Nature Now on all of your social media, by email to your friends, and it'll start the discussion, but it'll also start the whole important action.

Katie: And thankfully, it seems like from hearing from my audience, the emerging generations are more aware of some of these problems and are more willing to make change related to them. And that gives me a lot of hope to see that even younger kids are starting to pay attention to these things. And it's also why I'm so grateful to get to be part of this community of moms because I also think moms have a unique, powerful ability to create societal change, not only because we're so involved in voting with our dollars and purchasing decisions but also because we're directly educating and impacting the next generation. And I think for any of these problems going forward, moms play such a key role in both of those things, both how we're spending our money and what we're supporting, and also raising awareness in education, which creates that ripple going forward. And so I love that you create resources and that you're here today talking to all of us as parents.

Jeffrey: I also want to say that the timing and who you represent is perfect. So, the current pandemic told everyone about microbe's ability to wreak havoc. There's a need, there's like an unmet need to try and reduce the possibility of future disasters. So, we have two main asks for our Protect Nature Now campaign. One is that we don't genetically enhance pathogens, which if they escaped could cause a pandemic. It seems like a no-brainer, but no one in the world is preventing it with laws. So, we're saying none of this type of research should take place, there's been hundreds of lab accidents, even at the most so-called secure ones at the CDC and elsewhere, we must lock it down so that if we're given the opportunity to enhance the ability of a pathogen to be transmittable or to cause to increase its virulence, we should stop, we should not do that. So, that's one.

Second, we shouldn't release any genetically engineered microbes anywhere, ever on purpose, and we need to increase the security and safety of any facility that creates them or uses them. So, there's two different asks. One is specific category of potentially pandemic pathogens, we simply do not enhance their ability to kill. And the second, we do not release any GMO microbe no matter how safe it may seem because we don't understand the impacts of the changes that we're making in the genome, especially knowing that it can mutate, it can be swapped, it can travel around the world, and it can change the nature of nature in ways that we don't even know how to measure, let alone its impact.

So, those are the two asks. And the pandemic has alerted people to, potentially pandemic pathogens, to the nature of microbes. It has given people their level of receptivity. It has created political will to want to make a change. The structure of the global threat from climate change has gotten more people on the planet, thinking about planetary survival than the history of mankind has ever done. We don't generally think about planetary survival in our past. We don't read about it. Now, people are thinking about it. This generation, in particular, as you describe, they're thinking about climate change, are thinking about oceans, are thinking about food, all these different things. So, again, increased receptivity. So, you add that plus the pandemic, plus the new technology, which today, today is in a situation where we can devastate nature. So, there's a demand and an urgency, and it's the urgency and the threat that often get people to act. So, it's a pregnant moment for change. And I think you said it perfectly, moms are going to lead the way because moms are wired to protect like no one else.

Katie: Absolutely. And I know when we talk about these things, it sounds like something out of a dystopian sci-fi movie. And in some ways, it very much kind of is something that has been only the realm of that in the past. But I also like to make sure and always leave people with a message of hope and positive action. And so I'll definitely make sure that Protect Nature Now link is in the show notes, you guys can find that there at wellnessmama.fm, or just go straight there. But I think it's also just important to reiterate that there are steps we can take, that can keep this from becoming the very real dangerous situation that it could be, and that in doing so, silver lining, it can create greater awareness for a lot of other issues, and hopefully positive change, and in many, many directions.

Another question I love to ask toward the end of interviews is if there is a book or a number of books that have had a profound impact on your life, and if so, what they are, and why?

Jeffrey: You know, it's interesting, I read a lot, but it's not often in the form of books it's like, I have to read so much information for 25 years on GMOs. The biggest book that's certainly had the biggest impact in my life was the book that I wrote, "Seeds of Deception." It was the process of writing, I'll deeply paraphrase Ernest Hemingway, sometimes I write to the best of my ability, and sometimes I write better. So, it was like writing the book was like, "Oh, my God, I've never written a book before." And it was like coming through me. But then I also chose an angle to talk about the health dangers, the corrupted approval process, and to do it in story format. And that became the world's best-selling book on GMOs, propelling me into a global player in this. So, I released it in September 2003, and in the next nine months, I was in five continents. And the book became... It was the best seller for more than a decade, and I went to 45 countries speaking. I was traveling six to nine months a year, and I was building a movement, training 1,500 people to speak on GMOs, organizing more than 10,000. So, it really was a defining point in my life, more than any other book, the process of writing the book, and the process of getting the information out about the book and everything else. So, it was, you know, hands down more influential.

Katie: And I've read it. I'll link to that as well in the show notes. Definitely recommend it. You've been raising awareness about these things for a long time now, and I'm deeply appreciative of your work. And like I said, the fact that you are educating and also giving action steps and hope, because often I think in this world there's a tendency to educate and talk about how bad things are, which is important, but it has to be balanced with, where do we go from here? So, I appreciate so much the work that you're doing and especially raising awareness about these emerging issues. I'll make sure people can find and keep learning from you in the show notes, again, wellnessmama.fm, for you guys listening while you're on the go. And Jeffrey, I know just how busy you are, thank you so much for your time today.

Jeffrey: Thank you, Katie. It's a pleasure to be here. And I really appreciate your positive outlook as well, because we meet on that level. It would be a horrible career if I just spent 25 years getting people depressed, we've got to make a change. And thank you for being a part of that in this world.

Katie: Thank you. And thanks as always to all of you for listening and sharing your most valuable resources, your time, and your energy, and attention with us today. We're both so grateful that you did and I hope that you will join me again on the next episode of "The Wellness Mama" podcast.

If you're enjoying these interviews, would you please take two minutes to leave a rating or review on iTunes for me? Doing this helps more people to find the podcast, which means even more moms and families could benefit from the information. I really appreciate your time, and thanks as always for listening.