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# The Evolution of Immunology

James Maskell with Aristo Vojdani, PhD, MSc, MT

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**James:** Hello! And welcome back to The Evolution of Medicine Summit. This is your host James Maskell. And I'm really excited to have an expert in the field of immunology and microbiology today to talk about the evolution of immunology. Dr. Aristo Vojdani has been doing this for a very long time. He is a PhD in immunology and microbiology, has done a number of postdoctoral trainings, and holds a number of academic positions, including currently at UCLA.

And today we're going to talk about the evolution of immunology. And this is a topic that potentially is something that's out of the realms of something that's interesting to the general members of the public. But it is becoming more and more important because the science on immunology and the majority of the immune system is changing significantly. So who better to be able to speak about that change in the exciting developments in this field than Dr. Vojdani. So thank you for being with us today, doctor.

**Dr. Vojdani:** Thank you, James, to have me on your program.

**James:** It's great to have you here.

So 2011, we have the NIH study on the human microbiome project. And so for the first time, the general public and science and the greater medical system started to

understand that there was a lot of microbes in the body, more than we thought. And the majority of them were helping us to be healthy.

Looking back on that, obviously, this is probably something that you were aware of a lot longer before that. So can you just talk us through this new understanding? And it seems like it must be the most exciting time to be in the field of immunology and microbiology.

**Dr. Vojdani:** Absolutely. This is the most exciting time. And your question is taking me also back to 1965 when I took my first course in immunology and, of course, at the same time, other courses in microbiology. I became in love with the field of immunology. Also, the professor at that time told us, "The future of medicine is depending—the future of development and progress in medicine—is going to depend on immunology and microbiology." And absolutely, he was correct. And now the journal articles by thousands are coming out—started almost ten years ago—looking and dealing with the importance of gut microbiota in human health and diseases and immune functions and so forth.

**James:** Absolutely. I mean, the gut microbiome...As soon as I saw it, for me, it was the cover of *Scientific American* in 2012—June 2012—where I saw that it was reporting on the human microbiome. And I was like this is something that those holistic doctors, functional doctors, naturopaths that I've worked with

for ten years or eight years, I saw then, at that point, that a lot of their understanding of the role of the gut and the role of microbes was now being vindicated by science.

Is this the trend that you see that practitioners understand that the strategies and things that they've been using are now being understood and vindicated by mainstream science?

**Dr. Vojdani:** Yes. I heard an expert in alternative medicine during past thirty years. And they were talking about this almost thirty years ago. And so we have to give them a lot of credit for those who were talking about gut dysbiosis twenty-five years ago, thirty years ago, and it's relationship to different diseases. So they were really ahead of their time. Or they were not really ahead of their time. Maybe the other part of the medicine was behind!

**James:** Yeah. Maybe that's a bit more like it. But there was this time in American medicine between 1913 and the year 2000 where we really got away from this understanding of leaky gut and gut dysbiosis. But my understanding is just before penicillin came out in the early 1910, 1913, around then there was some understanding of gut dysbiosis by scientists at that point, right?

**Dr. Vojdani:** Yes. In 1903, the famous Metchnikoff introduced the terminology of gut dysbiosis, 1908. And so when we talk overall about immunology, even in the field of immunology, the field of *mucosal*

*immunology* was ignored for more than a hundred years. Only in the past ten/fifteen years with advancement of the microbiome and all of that, the field of mucosal immunology also flourished.

Now, we have a Journal called Mucosal Immunology. There are international meetings about mucosal immunology. And why? Because they teach us about the importance of the gut in many, many areas of the body's physiology. For example, we know that the gut is playing a role in oral tolerance, the mechanism that's protecting us against foreign material, a mechanism that teaches us to live in harmony with gut microbiota. Our immune system should not attack our own gut microbiota. Our immune system should not attack the food antigens and proteins and peptides which we consume. So we call that oral tolerance, which is induced by type of cells discovered about fifteen years ago called regulatory T cell.

The other part, which is important for gut immune function—mucosal immune system— development of mucosal immune system, secretory IgA. How much secretory IgA is playing role in preventing entry of undigested food and bacterial toxins to the submucosa and then regional lymph nodes and circulation, and prevention of autoimmunities? The gut is playing a role in the establishment of barrier integrity. And, finally, the gut microbiome also is playing a role in overall immune system. We call that systemic immunity, in particular, immune function.

**James:** Yeah, that's amazing! And that's really exciting. So could you give an overview? If someone was trained in immunology, but not in mucosal immunology, what would they be missing if they didn't understand that? Because my understanding is that eighty

percent of total immunity comes from the gut and this mucosal immunity. It sounds like people would be missing the majority of our defenses if they weren't looking at this.

**Dr. Vojdani:** They will continue doing the same thing as they did during the past thirty years to individuals in alternative medicine who were the pioneers in the field talking about gut dysbiosis and its relationship to the health and diseases. So the bottom line is this that because they did not read or they're not reading these scientific journals in the field of mucosal immunology, they are going to dismiss completely this whole idea of gut microbiome playing a role in human health and diseases.

One of the classical example is a joke about fecal transplant, which is really the idea is taking good bacteria and introducing it into the body of an individual who's having a problem with the gut, gut inflammation and other disorders, including metabolic syndrome. But they will make a joke out of that, rather than looking at the mechanism how based on immunology and microbiology, how this good bacteria is going to work to change the balance between T helper-1 and T helper-2 and regulate the immune system and the mucosa and, therefore, preventing all those disorders associated with GI disorder.

**James:** Yeah. So over the course of this whole summit, we've heard from people in fields as diverse as psychiatry and endocrinology and neurology and gastroenterology. All of these areas, these have seemingly in the past been separate from our understanding of the gut. But it seems to me from all of these experts that the gut is playing such a major role in the inflammation and the process of upregulating and downregulating inflammation and

just information generally in the body, that there's almost no reason why as medicine involves the gut needs to be really associated with all forms of medicine.

**Dr. Vojdani:** Yes. I'm a hundred percent agreeing with you. And I'll introduce another terminology. They're telling us that usually they are usually saying, "You are what you eat." Why do they tell us you are what you eat? Because if you are on vegetarian diets, you have different microbiota. If you eat more meat or carbohydrates, you are going to have different microbiota.

And so, therefore, if you have the kind of diet which causes gut dysbiosis, gut dysbiosis causes overgrowth of bad bacteria. Bad bacteria releases endotoxins, which we call them lipopolysaccharides. Endotoxins not only causing inflammation in the gut, they can open the barrier, the tight junction proteins. And, therefore, undigested proteins and peptides, the lipopolysaccharides or endotoxins themselves can get into the circulation.

Now, the inflammation from the gut goes to the circulation. And even if we don't take care of inflammation in the gut, LPS can open the blood-brain barriers. And here is the connection between the gut and the brain. I'm sure when you talk to some of those psychiatrists, they told you about that microbiota can change behavior. Microbiota can change also patient clinical symptomatology of chronic fatigue and fibromyalgia.

Or a patient with depression. When the group in Germany found that lipopolysaccharides and antibodies against lipopolysaccharides can be detected in patients with depression, major depression. If you repair the gut, if you give them probiotics and repair the barriers

and reduce the endotoxin load, then also you repair the blood brain barrier and, therefore, depression will go away.

**James:** Wow! The evolution of medicine, it seems that we're moving to a stage where we understand the connectedness of all the systems rather than all the separateness. And that's a perfect example of that. And actually just around this time, we have the launch of the new journal on the gut and the brain. It's been a huge connection. We've had neurologists speaking on it. We have psychiatrists. So it's certainly something that's more and more and more.

So what you were referring to earlier was leaky gut. And that's a terminology, again, that when the naturopaths and other holistic doctors were using it five, ten, fifteen, twenty, twenty-five, thirty years ago, were seen as talking an unscientific language. Just for everyone's that's listening, because there are probably doctors who are listening who probably think that it's unscientific, could you just take us through your the literature or the science that's showing that this is a real phenomenon? And the impact that it's having through the pathway that you just mentioned and other pathways?

**Dr. Vojdani:** I'll be very happy to go through this. And the kind of articles I'm reading about this subject, as you know, you mentioned already *Science*, *Nature Medicine*, *Journal of Immunology*, *Journal of Microbiology*. These are the first class of journals which talk about this.

And, for example, I have one of the articles from *Science* talk about the influence of gut microbiota on human health is continuous from birth to old age. And early environmental factors such as

methods of delivery, whether it's a cesarean or natural birth, nutritional factors—breastfeeding, bottle feeding, and epigenetic factors—all of these have been implicated in development of healthy gut and its microbial symbionts. And any changes in gut microbial composition in early life—this is very important—can influence risk for developing disease later in life.

And so when we talk about extrinsic environmental factors, we have to pay attention to antibiotics because antibiotics are going to affect our gut microbiome. The diet, whether carbohydrate or vegetarian diet or protein diet based, all can have positive and negative effects on our health. Stress. And is extremely important.

I'm sure that you heard about some famous experiment in different universities. The professor who was the conducting experiments in mice who were giving them certain diet in a certain environment. And the majority of those mice were developing type I diabetes. So what happened that this professor moved to another university in different state. So he tried to repeat the same experiments. No results. What happened? Because change of environment, stress, and change of microbiota, changed the outcome of his experiment. That's why that kind of thing, that kind of experiments now open completely a new field of studies.

So the environmental factors, stress, all of that together can affect the gut microbiota and its implication for human health. So any disruption in gut microbiota, which we call the gut dysbiosis, can lead to a variety of different diseases including inflammatory bowel disease, colon cancer, irritable bowel syndrome, gastric ulcers, liver disease, obesity, metabolic syndrome, asthma,

atrophy, hypertension, mood and behavior disorder. Hormonal factors also affect the gut microbiota. Why? Because the gut microbiome, the gut bacteria have receptors for hormones. That's why stress and hormones can affect the gut microbiota. So we have to pay attention to all of that and their influence on the gut microbiome, which is so important in human health and diseases.

**James:** Yeah. And so what you've laid out there is basically almost any symptom that you have or any sort of disease basis of a disease, you should be looking at the gut as a primary way of dealing with it.

But my understanding also is that even if you don't have the numbers to see the disease, this could also be going on because I know with the leaky gut, a certain amount of times there's like this predictive autoimmunity where you don't quite have autoimmune disease, but you're on your way to developing it. So I'm sure there are a lot of Americans out there that are on their way to having one or more of these autoimmune diseases. But they just don't have the symptoms to put them in that category yet. Is that fair?

**Dr. Vojdani:** Yes, James. Forty-five years of my work ended up with the most important development, which is my passion is called predictive antibodies, which I published several articles in this field. And predictive antibodies are antibodies detected in the blood or saliva five to ten years before the onset of disease development. By looking at those biomarkers, we can make changes in the gut microbiota, change in the mucosal immune system, change in the gut dysbiosis and gut integrity, change in overall immune function. We can prevent the onset of many autoimmune diseases, which affect about fifty-three million Americans,

and about ten percent of the world population.

So that's really my passion. Early detection is the answer. We cannot wait until the patient will have full-blown disease and just treat them for their symptoms. And they will be on medication for the rest of their lives. But if we'll pay attention to the root cause of diseases, which are environmental triggers such as infection in the mouth, dietary proteins and peptides, correct diet, and many toxic chemicals—xenobiotics—which all the above can affect the gut microbiome, and the gut microbiome, which is connected to overall human health and diseases could be prevented if we're paying more attention to the gut microbiome and environmental triggers.

**James:** So if you got fifty million Americans that have autoimmune disease right now, if you added in all of the people that have these predictive antibodies, how many people would that be?

**Dr. Vojdani:** I think at least one out of two will detect predictive antibody.

**James:** And that would explain why these numbers of autoimmune diseases are skyrocketing. And one of the reasons maybe why we don't realize that it is skyrocketing is that rheumatoid arthritis gets treated by a rheumatologist. And irritable bowel syndrome gets treated by a gastroenterologist. And so you're at a point where it doesn't look like it's the same disease. But from what I'm hearing you saying is that just because of the cause factors, it is the same disease just playing out in different systems for different people, right?

**Dr. Vojdani:** Yes. If really gastroenterologists and rheumatologists—especially, I'm talking now to the rheumatologist—

if they knew that only this year about twenty different articles that I read, published in scientific journal, connecting the oral bacteria, such as porphyromonas gingivalis to rheumatoid arthritis because porphyromonas gingivalis is secreting a toxin. The toxin gets in the gut, changing the gut microbiome, changing the gut permeability, causing leaky gut syndrome. Now the bacterial toxin gets into the body, activating certain lymphocytes. And then those activated lymphocytes can get to the joint, plus the toxin in the joint, causing such inflammatory response, which after five to ten years will end up with full-blown rheumatoid arthritis, which the rheumatologist are taking care of them.

But if we'll detect that early stage where the patient is having problems with the gum and will go to the dentist, will get rid of that, that way we can prevent full-blown rheumatoid arthritis in many patients. This is just example.

**James:** Yeah. So that's a great example. And I think it really brings home the importance of one, understanding the body as this holistic entity, which it's all added because I'm pretty sure there are no rheumatologists who are having a good relationship with the dentist or referring to a dentist. But it seems like if we want to get the root cause of these diseases and really reverse them or deal with the problems at the root cause, we're going to have to develop these kind of relationships.

**Dr. Vojdani:** Yes. Absolutely. And back to the predictive antibodies, James. I have done some research by looking at block of 1,000 so-called healthy subjects. We bought or purchased the blood from different companies, which screened the patients to be healthy based on some testing. But to me

that represent the population in the U.S. Just a small example. We found that twenty-five percent of those made antibodies against gluten. About twenty-five percent made antibodies against milk.

Recent article just is going to be published in about two weeks in *Journal of Applied Toxicology*. I looked at antibodies against different xenobiotics, including bisphenol-A, aflatoxin, parabens, and many other chemicals, which all of us are exposed to on daily basis which can affect our gut microbiome. And found about fifteen to twenty-five percent of healthy population making antibodies against these xenobiotics.

What is the meaning of that from immunological point of view? That we are exposed to all these chemicals. Not in every person these chemicals are going to be metabolized and secreted from our system. Unfortunately, in about twenty-five percent, these chemicals and their metabolites form a complex with human tissue the results of that will be autoimmunity.

So the only choice we have because we detect these predictive antibodies, these antibodies in such a high percentage of population, try to remove the triggers. If it's infection, we have to go to the dentist. If it's in the gut, we have to pay attention to the gut immune function. If these are the chemicals, we have to remove them from the environment. But, unfortunately, the trends—the way the lifestyle is going—we are increasing and introducing more toxic chemicals to our environment and, therefore, to the population as a whole all over the world.

**James:** Absolutely. So can you just take us through like the things that we need to be avoiding if we want to keep a healthy microbiome?

Because it seems like from everything that we've heard, the number one thing that you could do to keep yourself healthy and prevent all of these different diseases is to focus on making sure that your gut has a good solid microbiome, that it's deep and broad. There's a wide range of microbes in there. What are the things that we're doing as a society that are causing the problems? And what can we do to get back to normal?

**Dr. Vojdani:** Yeah. Thank you. First of all, there is no one formula which is going to work for everybody. Let's make that clear. But I can talk overall. Why one formula is not going to work for everybody because we have each one of us we have different gut microbiome. But the good news is that the articles I read that change in the diet can rapidly change or alter the human gut microbiome.

So number one, change your diet. If you have problem with gut immune function and overall with immunity, change your diet. For example, if you are eating too much meat, add more vegetables to your diet. Add more fruits to our diet. However, here I want to add one more item that to be on organic diet is extremely, extremely important.

An article I read in *Environmental Health Perspectives*. They took a few kids. They put them on normal diets. They looked at pesticides in the urine. They found significant elevation in pesticides in the urine of that group of children who tested. Then they switched them to five days of organic diet. They could not detect those chemicals, those pesticides in their urine. They put them back on normal diets one more time. They could detect exactly the same chemicals in their urine. So, yes, we can recommend your changing the diet. But we have to make sure that diet is going to be organic diet. So number one is pay

attention to the diet because diet can alter and change the human gut microbiome within days. And the article I have in front of me, in five days they could find changes in gut microbiome by changing from carbohydrate to vegetarian diet. So that's number one.

**James:** So can we just chat a little bit more about that because I know that there are certain foods that are prebiotics that help with the development of the good bacteria. What are some of those foods?

**Dr. Vojdani:** Those which contain fructooligosaccharides.

**James:** And then we've had people talking about things like asparagus and other green vegetables like that. Is that sort of on line?

**Dr. Vojdani:** Yeah. I have no doubts those are the one and broccoli. Lots and lots of vegetables are really, overall.

**James:** Well, I know you're an immunologist and not a nutritionist. So I'll leave more questions about that to the nutritionists.

But let's continue on. So you said the diet. Are there any other diet things that we should be watching out for because I listened to The Gluten Summit last year with Tom O'Bryan. And it was pretty clear that in a decent number of people, gluten is causing the degeneration of the lining of the mucosal and the gut integrity, right?

**Dr. Vojdani:** Yes. Absolutely. That's why I, when I give a lecture, in the beginning and at the end of my talk, I have this triangle saying that detect, remove, and repair. So if a patient is making antibodies like those which I was talking about—the thousand individuals—twenty-five percent of them make antibodies against gluten, make antibodies against milk, make

antibodies against soy or corn, then it is wise to remove those items from the diet because those proteins are not compatible with gut microbiota of that individual.

That shows the gut microbiota and the enzymes and all the whole system together cannot digest those proteins to become peptides and then to amino acids. And, therefore, the undigested peptide again can get in circulation. We make antibodies against them. So it's logical, based on those testing to remove those environmental triggers. In this case, the diet three components, which we make antibodies against them.

So gluten is one of them. Milk is another one. But in some individuals could be completely different foods to be removed from their diet.

**James:** So that's the beauty of seeing a practitioner who can help you to put together like a doctor who can help you to put again maybe an elimination diet or something like that so that you can see what the most important thing is for you?

**Dr. Vojdani:** Yeah. And also then we have to look at infectious agents. If they, for example, make antibodies against *H.pylori* or mycoplasma, or they make antibodies against *Yersinia enterocolitica*, it is wise to pay attention to these bacteria to treat them. And hopefully that will reverse the effect on the gut microbiome. So dietary proteins, infection—whether it's in the gut or in the mouth—we have to pay attention to that.

And, finally, we have to pay attention to the xenobiotics, all these chemicals that on daily basis without paying attention. If you go now to any coffee shop, they give you a cup of coffee cup. The cup of coffee is given served to you in

a paper cup coated with a layer of bisphenol A. And all of us, we are blinded and using that without thinking. We are drinking from plastic bottles. So we are loaded on daily basis with many chemicals. That's why 700 different chemicals in 1987 were detected in the body fat of people who were tested in America. And there are more. By now we probably have several thousands in our issue. This is the body burden of chemicals.

So we have to try to minimize. So healthy diet, organic diet. Remove the infection as much as possible or treat the infection. And, finally, try to remove the xenobiotic from your environment and from your diet.

Do you know that if you take shower and put shampoo on your body or whatever and you wash your hands with soap, you are introducing at least ten to fifteen to twenty different chemicals into your own system?

And so this is what's happening. We have to pay attention to the role of environmental triggers in the induction of immune disorders. Otherwise, these numbers are going to be increased from year to year. And we are witnessing an epidemic of allergies, epidemics of autism, epidemics of ADD, ADHD and autoimmunities.

**James:** Absolutely. So those environmental triggers can be diet and can also be toxicity. Are there other environmental triggers that lead to this or are those the major two categories?

**Dr. Vojdani:** There are three: infection.

**James:** Yeah, and infection, as well.

**Dr. Vojdani:** The three components and toxicity.

**James:** What about the antibiotics

because I know that's a big way in which we're disrupting the gut microbiome.

**Dr. Vojdani:** Yes. Thank you very much asking about antibiotics. To me that's a category of chemicals. It's not different from any other chemicals. James, for your listeners, I would like to introduce an article recently I wrote for very special issue of the Journal called *Autoimmune Disease*, which I'm the editor of that special issue. Eleven different articles written by different researchers in the world.

This article, which is the leading article written by me, it's entitled, "A Potential Link Between Environmental Triggers and Autoimmunity." So they can read about this whole issue we were talking in the past five minutes about: the role of environmental triggers in immune function and autoimmunity. And so *Autoimmune Disease*, 2014, under Vojdani.

**James:** Yeah. We'll definitely take a look at that. And this is another part of the evolution of medicine is that this kind of information is not just available to doctors. Everyone can find this information. It's available. And you can listen to this kind of information here today.

So, doc, there's patients on here who are listening to this, I'm sure who are really rethinking the way that they are going to go about looking after their symptoms and a whole array of types of symptoms, whether they be manifesting in the gut or in any other part of the body because this inflammation and the dysbiosis and the leaky gut is so crucial to everything. But I'm sure there are also doctors and other practitioners that are listening that are interested in doing great medicine and really getting to the cause.

More and more doctors are seeing the ability through functional and integrative medicine to get to the cause and deal with the cause. So they can help their patients remove these environmental toxins and remove the infection or deal with the infection and change their diet in a positive way.

For the doctors who are listening who want to do better medicine and want to help their patients more quickly, what are some tips or tools or other things that you can provide for them to help them to get better results for their patients and get their patients back to a healthy optimum as quickly as possible?

**Dr. Vojdani:** Excellent question! My message to them, yes, my friends, although I know you guys are very busy. You don't have time. But, please, if you have any extra time go to scientific journals such as *Mucosal Immunology*, *Nature Medicine*, *Science & Nature* and read about some of these articles, fascinating articles, about the role of gut microbiome in human health and diseases.

If you don't have time, then at least you can find three or four days' time and go to functional medicine meeting, other alternative medicine meetings, and educate yourself about the role of environmental triggers, gut microbiota in immunity and health. And by doing so, you are going to help your patient significantly and prevent many diseases at early stage as possible.

**James:** That's so great. And I certainly agree with that. I've had some conversations over the summer with people that are actually on the cutting edge of some of the citizen science with regard to microbes in the gut. So there are ways that you can go and measure your own gut microbes and see exactly what's going on in the gut.

And some of that information is looking at, "How do you actually develop a really solid microbiome?" And maybe you could just comment on this because it seems to me from what you just said, yes, a doctor or a dentist can help to deal with the infection. But it seems to me like the majority of our ability as patients or a patient's ability to avoid autoimmune disease is really taking responsibility for the diet and the toxins, right?

**Dr. Vojdani:** Yes. Absolutely.

**James:** But it also, in some of this research that I've been reading, it said that the number one way... Well, there are lots of different ways that you can get good microbiome. You can take probiotics. You can eat food that has probiotics in it.

But what was really interesting to me as I saw that they were saying that the people with the best microbiomes were people that were always in nature. People who lived on a farm or had a pet or got into nature regularly because just by lying on the grass or putting your hands in the dirt, you're getting access to a whole range of microbes that end up making it into the gut. And it's a really effective way.

That, again, seems like another step where medicine is evolving in the way that that's not a medical intervention. That's just going to the park or getting outside and getting into nature. Is that along the lines of what you're seeing as far as like how do we actually improve the microbiome once we know that it's suboptimal?

**Dr. Vojdani:** You said it all, actually. So the bottom line is that we have to pay attention to the environmental triggers that you mentioned. Also, we can support our gut microbiome not just by diet. We can take probiotics. We can take supplements such as glutamine,

N-acetylcysteine. Let's not forget that the same cell I called that regulatory T cells, which regulate the mucosal immune system, which is responsible for establishment of oral tolerance. And if there's a break in oral tolerance can result in autoimmunity.

So the same type of cells, regulatory T cells, have receptors for two vitamins: vitamin D and vitamin A. So, therefore, when we take supplements such as vitamin A and vitamin D, we can activate our regulatory T cells to regulate the mucosal immune function that's regular to the microbiome. And, therefore, it can prevent leaky gut syndrome and autoimmunities. And so those are few of many. Of course, the clinicians, they have an array of list of different items in addition to that. But to me, those are the most important ones: L-glutamine, probiotics, and vitamin A, vitamin D. And there are many other nutritional factors such as boswellia, curcumin, which is anti-inflammatory, and many, many others that I'm sure the clinicians know more about them than me.

**James:** Absolutely. Yeah, there's a lot of good stuff out there. I'd love to just ask you about science, in general, because you're a scientist. You're not a doctor seeing patients. But you're in the field of science. And it seems to me from someone who's not in the scientific world that just the pathway that you just described, it's a complicated parkway. It's a number of things happening. It seems to me that in this quest to really understand truth, we've gone so far down the path of reductionism that now that we really need to understand the body as a holistic entity, it's going to be difficult to retool science to be able to really understand this. Like the gut microbiome is a perfect training tool to help everyone to see that holism exists because these microbes that we thought were bad

and now good. And what is good and what is bad is changing all the time. And science is changing. And if nothing else, it's a lesson in the interconnectedness of everything.

How do you think big science is going to cope in the ten or fifteen years to deal with learning that the body is an interconnected system, given that their paradigm is so reductionist in nature?

**Dr. Vojdani:** James, I'm very happy that you asked that question. And you asked me. You put a question to a scientist. And so, therefore, the question is not about medical doctors because in my opinion, the field of science is ahead of medicine by thirty years.

And, so, unfortunately, all these articles you and I talked about them. All these issues, we talked about them in past twenty, thirty minutes, only small percentage of clinicians are familiar with. But, scientists, if they read these journals, if they do research in the field, there is no doubt they will come to conclusion, this is fascinating field, extremely important field, the gut is connected almost to every single system in our body.

And, for example, here I have an article from *Nature Medicine* in front of me. "Gut Feeling: The Emerging Biology of Gut-Brain Communication." So this area is going to flourish more and more. And hopefully, my hope is that not only the scientist will become aware of this. I hope this information through different avenues, such as functional medicine, alternative medicine, will get to the mainstream of medicine so they will be able to use some of these information for treatment of their patients and prevention of many disorders, which affects one out of two Americans.

**James:** Yeah. Absolutely. It's such a massive crisis that it warrants. But one of the things that I think is exciting is that you have people who will be listening to this now, and they're going to seek out doctors that understand or are ahead of this information. And so it seems to me that these kinds of summits or these kinds of events really help to accelerate this evolution of medicine.

You mentioned organic foods earlier. Why are there so many more organic foods now? Why does the grocery store that I used to go to in Georgia—rural Georgia in 2005 that had no organics—I go back eight years later. And it's got tons of organics. It's because of consumer demand. The consumers realize that this is important. They start demanding it. And then it sends these price signals and information signals out to the rest of the industry that this is something important.

Now, it's the same thing with this. If you have a whole network of functional medicine doctors—which we have in Revive Primary Care—where you can go. And there's one almost in every zip code now. If thousands of patients start wanting to get this type of medicine, then you're sending price signals out to the rest of medicine. And it forces everyone to catch up.

And to me, this is an exciting time. You said it was an exciting time to be in science and immunology. But as a result, it's an exciting time to be in medicine. Because I grew up, I was definitely the weird kid at school who did the natural therapies. My parents were really into it. And for a long time, these doctors took a lot of abuse from mainstream medicine because they were not scientific. And they were quacks. And now here we have a situation where we're now starting to understand that the body is

holistic in nature. The body does have an interdependence with all the different systems. And now it's the time of this kind of practitioner to shine.

And so I'm really excited about driving consumer demand to those types of practitioners so that more and more doctors realize they've got to get on the ball. They've got to start reading these journals. They've got to understand microbial and mucosal immunity.

**Dr. Vojdani:** Yes. A hundred percent agree with you. And there are some lights out there. For example, last week or ten days ago, the Institute of Medicine came out with a list of the foods that they call them the Dirty Dozen. And then the other fifteen, which are healthier to eat. And so if we read those kind of articles, we find out even washing fruits by high pressure, we are not going to remove the pesticides and herbicides from the fruits and vegetables. Therefore, the choice is organic. And that article very elegantly was written. And I highly recommend that to read that article, as well.

And, finally, I would like to give you a lot of credit. This kind of summit you guys are putting together, and other colleagues, which I have been interviewed for in the past few months, Dr. O'Bryan and others extremely, extremely are educating thousands and thousands of people. And if even these individuals are not, majority of them are not medical doctors, patients can take this information to their doctors.

And that way, the doctors will go after these journal articles. And we hope that will educate themselves and try to help their patients by recognizing that there is something called gut dysbiosis and gut microbiome, and why gut microbiome is so important in

human health and diseases.

**James:** Yeah. Absolutely. I completely agree. And thank you for saying that. We're all working together. And the problem couldn't be any more real or huge or appropriate. Autoimmune disease and chronic disease is on a pathway to bankrupt not just America, but every economy that is westernizing and getting the western chronic diseases.

And the truth is, although the doctor is important, the role of doctor is less important than in the past. Because as you just said today, if we can improve the diet, get rid of the toxins, reduce the stress, work with the microbiome, we can really reduce our predictive autoimmunity. We can reduce autoimmune. We can reverse chronic and autoimmune diseases.

And although the doctor might be providing some guidance in that situation, it's more on the patient. It's what the patient chooses to do in the 167 hours a week that they're not in the doctor's office. And so we have a real opportunity to build a new type of medicine that's based on patient empowerment, rather than medical patriarchy.

**Dr. Vojdani:** That's right! That's right, James.

**James:** Well, look, I really appreciate your details today. For those doctors who are interested in learning more about your work or finding out more about it or patients, what's the best way to find out about what you're doing or to interact with you?

**Dr. Vojdani:** DrAri@msn.com. And my telephone number also is 310-657-1077.

**James:** Awesome! My intention with this summit is that we shine a light on people that are ahead

of the curve. And the majority, I think, of integrative medicine is ahead of the curve. I'd heard from so many people that you really had an amazing handle on all of these areas. And I really appreciate the opportunity to get this information from you and share it to a wider audience.

You can, hopefully, tell from me that this is something that I'm passionate about. Our goal with this summit is to let people know what's going on and then give them easy resources to find practitioners that can partner with them to create long-term health. And I just really honor your role in finding this.

The last question I would ask you doctor is, this whole conference has been on the evolution of medicine. And it's been awesome! I've asked every doctor that I've had on, or scientist, to give me their own perspective on the evolution of medicine. And it's been universally just amazing with what everyone's shared.

From your perspective as a scientist, when I say the words "evolution of medicine," what does it bring up for you?

**Dr. Vojdani:** In my own field, I go back to 1965—almost fifty years ago—which I took the first courses in immunology, and then doing my master thesis and PhD between 1969 to '76, I became instructor of immunology, teaching immunology in the laboratory.

And then we were using testing such as ring tests, immunodiffusion, agglutination. And those were very primitive testing. Today, whatever I used to for my PhD, which took me probably five years to finish, I can finish it in two months.

So we made a significant advances in medicine from diagnostic point of view, different methodologies such

as ELISA, microarrays, functional MRIs, and many, many more. But, unfortunately, we put too much emphasis on the genes, which are responsible for about ten percent of the immune disorders.

So, therefore, also we put too much emphasis also on drug development and managing the symptoms of many disorders. What we did not pay attention to prevention of diseases. We ignored completely the role of environmental factors or triggers in various immune disorders, including allergies and autoimmunities.

I hope, by looking at the evolution of medicine...And today we have all of this technology—all these good scientific journal articles, which are based on solid science showing the importance of gut microbiome, the mucosal immune system, the gut barriers in health and diseases—hopefully, clinicians will take advantage of these and use these in their practice.

**James:** Absolutely. That's a great answer to the evolution medicine.

Dr. Aristo Vojdani, thank you much for your time this evening. And it's been great to spend this time with you. I look forward to many more opportunities to accelerate the evolution of medicine.

This is The Evolution of Medicine Summit. We got great other talks for you today and all throughout the week. We've referenced some of those already.

Thank you so much again for being on. And we will see you next time.

**Dr. Vojdani:** Thank you!



# SuperCharged Immunity

Eric Zielinski, DC with David Jockers, DNM, DC, MS

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**Dr. Zielinski:** Hello, everyone. This is Dr. Eric Zielinski from DrEricZ.com. I'm a chiropractor and public health researcher who specializes in natural therapies. My passion and life's work is to help people live the abundant life, which is why I'm extremely honored to co-host this Essential Oils Summit with my friends Josh Axe and Jill Winger.

There's nothing on the planet, in my opinion, that is more versatile for everyday use and that promotes healing in the body than essential oils. I'm super excited about this session of the Essential Oil Revolution because I'm interviewing author of *SuperCharged Lifestyle Book* and functional medicine doctor, Dr. David Jockers. Dr. Jockers, I want to invite you and welcome you to the call.

**Dr. Jockers:** Hey! So great to be on with you, Eric, and I really love the program that you're putting on. I know it's going to help a lot of people.

**Dr. Zielinski:** You know, it is, Doc. It's unbelievable the lineup that we have, and we're really just humbled and blessed to have you. You know what? For those people who don't know you, tell us a little bit about yourself.

And specifically I know that you've been really focusing on functional medicine these past few years.

Many people don't know what that is. It's a new term for a lot of folks. So if you could just explain a little bit about yourself and how you fell into functional medicine and what your real purpose and life goal are.

**Dr. Jockers:** Yeah, absolutely. You know, I always had a passion for nutrition and exercise and just performance in general. Growing up I was an athlete, and I always wanted to perform better. And my mom was a naturopath. And she was into natural health and nutrition. And so she would teach me things like eating kale, which I hated when I was a teenager. It actually would benefit me in sports. And so I started eating kale and all of a sudden my taste buds changed. I started craving vegetables and super foods. When I got into my twenties, I started to really just become super passionate about just learning everything I could.

I got several degrees in nutrition and exercise science. I went to chiropractic school, graduated with a chiropractic degree, and then got into clinical practice and started teaching functional nutrition and really helping people with their lifestyle. And I realized that really over the last five/ten years- I've been in practice now for six years- the amount of autoimmune disease and chronic degenerative diseases like cancer, diabetes, heart disease. It's only growing. It's only going up and up and up.

And according to a lot of my mentors, it's harder and harder to get people well. And so I

started encountering a lot of very challenging cases, advanced cancers, people with autoimmune diseases that they had to twenty/ twenty- five years that had destroyed a good percentage of their bodily tissues. And I realized that just lifestyle change along with good quality chiropractic care, as great as that was, just wasn't enough to really help these people get over the hump.

And so I went back for continuing education classes and studied a lot of functional medicine. And really what that is it's really just a system approach to looking at overall health. And so we look at really clinical, when we're looking at lab work, a lot of it uses blood work and urine tests and stool analysis and things like that. We're looking at very functional ranges, rather than clinical ranges.

So we're looking at really tight measures on, for example, looking at hemoglobin to see if somebody has an anemic tendency rather than a full- blown anemia. We're looking at stool analysis to see what their bacteria, what their microorganism population looks like in their gut. We're looking at food sensitivities, things like that, anything that could be a risk factor for inflammation and slow healing processes in their body. And really addressing that with nutritional supplementation, lifestyle, essential oils- different things like that, different healing modalities to help somebody really regain health and regain a state of balance and homeostasis in their body.

**Dr. Zielinski:** One thing that I've really appreciated about the functional nutrition approach is it inherently respects our biochemical individuality. And there is no one-size-fits-all approach. So, you know, this wasn't originally going to be part of my discussion, but I just really feel it's important for you, Doc, because I know that you're an expert at this. You do not give everyone the same thing.

When the people come to receive chiropractic adjustments and spinal care for you, you have x-rays. You custom fit their care plan. You custom fit their nutrition, their exercise profile. How important is it, in your opinion, for all health care professionals to do that? And we'll just start from there with that question.

**Dr. Jockers:** You know, that's really where the rubber hits the road. Specific lifestyle principles—for example, good sleeping habits, getting rid of processed foods, eating more vegetables—things like that are going to help everybody. But with the kind of issues that we're dealing with today with the amount of autoimmune disease and the severe inflammatory spirals, these cycles of inflammation that most people are dealing with, most people that are chronically ill are dealing with. It just takes more than just lifestyle. And you got to be as specific as you possibly can. And so looking at lab work really helps us do that.

Understanding somebody's history. Understanding even things like maybe their blood type. Or I ask a lot of questions about, "Hey, how do you feel when you eat these particular foods? Do you feel gassy? Do you feel tired? Do you feel this?" Like, for example, when we're looking at gut function, some people do really well low carb. Other people need a little more starches. Some people need to

take out all the FODMAP group. I don't know if you have somebody talking about stuff like that, but all these particular types of specific carbohydrates. And so you've got to get very, very specific to help people that are in extreme cases.

And we'll deal with a lot of individuals that have gone to a dozen different doctors. They've read fifteen different health books. They've tried every program, and they just haven't gotten over the hump and so that's really where the rubber hits the road. And a great clinician is going to be able to really understand the individual's health history, ask the right questions, perform the right tests to get the right data to customize the appropriate program.

**Dr. Zielinski:** So what do you think are the dangers of this medical approach, we could call it, that basically pharma and the medical community have taken? I mean, what are the inherent risks?

**Dr. Jockers:** You know as far as just I think the biggest thing in the medical system, unfortunately, is that medications are used as a first line for health. And what's unfortunate about that is medications they just have a ton of side effects. All the research that's done with it, there's always a number of side effects that come with it. It's really just manipulating our natural biochemistry. And these are synthetic pharmaceuticals, of course. They're synthetic so they're not natural to our body. They're not innate to our body's natural rhythms. And therefore they're going to inherent with side effects.

And everybody responds a little bit differently based on their genetic type, based on a number of different factors. How well their body methylates and detoxifies. And so because of that, you don't really know how somebody's going

to react to a pharmaceutical. And pharmaceuticals, what we do know is that over 100,000 every single year taking normal dosages of pharmaceutical medications.

So it's one of the top leading causes of death in America. And so I'm not anti-pharmaceuticals. I think they certainly have a place. And we're thankful to live in a country where we have easy access to pharmaceuticals. But it should be down the road, right? Let's look at lifestyle. Let's look at how the individual's sleeping. Let's look at what kind of foods they're putting in their body, what kinds of toxins they're surrounded with on a regular basis, how they're handling stress.

Let's deal with those things, and let's save the medications for the emergency room where we've got emergencies or clinical histories where that individual may be, certain genetic issues, where that individual just needs something. And I would venture to say that, 95% of medications that are prescribed really shouldn't be prescribed.

And the other 5% can be life-saving, right, oftentimes are. And so we need to just really look at our medical system and our overall health care system and start to make those shifts, make those changes to look at medications as more of a later solution rather than a first cause, first solution.

**Dr. Zielinski:** You know, my gut instinct goes, as a writer, I want to coin everything that you're saying as "cutting edge." But it's really not. I mean what you're sharing with us is just timeless principles that people have used since the beginning of time on how to manage and treat our illnesses and prevent disease, but it's become, in a sense, revolutionary, I mean hence the name of our oil summit, The Essential Oil Revolution.

So for people that are hearing you, this is, I guarantee you there are thousands of people right now who have never heard this before. So what advice would you give these folks on how to best interview? Because we do and we need to interview our health care providers. So when they're shopping around for their doctor, chiropractor, naturopath, what sort of things should they be looking for?

**Dr. Jockers:** Well, I think the first thing is to really understand what a doctor's job is. And doctor means teacher. So really the greatest thing a doctor can do is take the time to teach you, coach you, educate you, encourage you- do everything they possibly can to help empower you to take back control of your health.

And so unfortunately, in our society, most of our doctors are trained really to be more of like therapists where they hear your symptoms, and they prescribe something. It's just treatment right away rather than really taking the time to teach you and educate you. And I think what we need in our society is a proactive approach where we take self-responsibility for our health, and we say, "I want to know what it's going to take for me to get healthy."

And it's not like you need to study the in-depth details of biochemistry. You don't need to know the Krebs cycle and this and that. But you do need to have a health philosophy. I think that's really where it starts. You need to understand, what is your health philosophy?

Like for example, I would venture to say that most of the people that are in this summit, our health philosophy really centers around that the body has an innate ability to heal itself, that the body was created to adapt to environmental stressors, and that we were created to overcome them. That

we were created, Eric, you and I are Christians. And so we look at it from a biblical perspective too that we were created to be overcomers, right? And that just like I John 4:4 talks about, "He that is in me is greater than he that is in the world." And so it's this mindset of my body is the most amazing healing vehicle, and I just need to honor the body.

And so when we take that mentality into our health care approach, we're going to look for circumstances, opportunities, doctors, resources that help to empower us with the information, the resources, the products that we need to help empower our bodies and strengthen our innate systems so they can heal themselves.

So that's what you want in a clinician is you want somebody that really honors that mentality, that says, yeah, your body is strong, that you are healthy, that you weren't created deficient. Instead that your body is strong enough to overcome the infectious organisms, the environmental toxins, all the things that you're encountering on a regular basis as long as you follow the rules of life.

And as a doctor, our job is to help teach you the rules of life, teach you the pros and cons of following or not following those things, and help to encourage and inspire you to really follow the rules of life, to honor your body, and give you really the most cutting edge strategies that work with your innate immune system, with your body's innate ability to heal to maximize your overall health and quality of life.

**Dr. Zielinski:** So with that let's transition and talk about your recent book that you just published, *SuperCharged Immunity*. Again, I ask you what does a super charged lifestyle mean to you, Dr. Jockers? It means something to everybody.

**Dr. Jockers:** Yeah, absolutely. Well, to me it means really this idea of thriving life. So I know for myself, growing up I was always tired. I was always fatigued. I had trouble sleeping at night but then during the day I was always extremely tired. And I thought it would just always be like that.

I just thought life was like that until I really started understanding the natural laws and rules of life and applying those things and applying advanced health strategies and seeing a huge breakthrough. My energy level went through the roof, my mental clarity. At one point I was a struggling student. I went to the top of my class. And so I started experiencing a whole other realm of life that I didn't even know existed.

And I think most people in society are settling for so much less than their best. They're really settling for mediocrity in their life. And they could have more if they just understood that number one, it existed. Number two that there are timeless principles that we have to follow in order to honor our body in order to give it the best chance to thrive. So *SuperCharged Lifestyle* is really just about thriving. It's about having incredible mental clarity, waking up in the morning with tons of energy, vigor, excitement about taking on our day, having lots of energy and excitement that we're able to put into our career, our relationships. We're able to put into our hobbies, extra curricular activities, all the different things that we want to do in our life that we're able to do that.

And you know, this idea in our society that you know that when turn sixty, seventy, eighty years old, our body starts to break down and life isn't as enjoyable, that's all a fallacy. We can thrive well into our eighties, nineties, over a hundred years. Moses got his life calling when he was eighty. You got Joshua

and Caleb fighting wars in their eighties and nineties in the Bible. We should have incredible mental vigor.

And I know, Eric, you're a lot like me. It's like hey, I want to have tons of energy. I want to be pouring and contributing to society at a really high level until the day I die. And I think a super charged lifestyle's what really, that's kind of like a blanket term that helps to give a title to what that mentality and that idea, that way of living is. And so that's why I coined that term.

**Dr. Zielinski:** So essentially what I'm hearing you say and what everyone really needs to take away from this discussion is what Dr. Jockers has put together in this book is a formula to help you live out your life purpose because with sickness, with disease, holding us back, there's very little that we could do. You know, I've always said this: the devil can't take away my salvation. But he can make me useless for the kingdom of God if I'm sick in bed all the time. Right? So how important is this for the church to realize. All the more.

And so, Doc, I just love the content of the book. It's evidence-based. And as a researcher, I've gotten to the point now in the last twelve years of doing this in my world of researching and reading that I can look at a website and within five seconds I can tell if this is a refutable resource. And you look at your book. I mean we're talking dozens and dozens of evidence-based citations. I love it.

And I've got to just give everyone that plug. For those of you who take advantage of this summit, you'll get Dr. Jockers's book for free. And that's his gift. So I just want to thank you, Doc, for doing that because it's very generous. It's a fantastic tool. And I want to dig into the book a little bit, especially

in some concepts that I'm sure that people have not heard of. First and foremost, this idea of hormesis. If you could describe that a little bit. I'm sure that's a word that a vast majority of people on the call are not familiar with.

**Dr. Jockers:** Yeah, absolutely. And that's a really key term because in our society, I mean, right now it's February. There's all this talk about vaccines and measles and this and that that's going on. And so really in our society, we're kind of just told that we're innocent victims of viruses and bacteria and that we're just susceptible to it.

In fact, the germ theory which is kind of like the basis for the medical system really what the germ theory explains is that there's a certain pathogenic organism—bacteria, virus, yeast maybe, or a parasite—that ends up causing a specific illness or disease. And so the key then is to locate, find out which organism it is, and then destroy the organism. And of course antibiotics and vaccines are really the major players when it comes to that sort of medical approach.

But what the germ theory also talks about is this idea that sure there's invading microorganisms but there's also the quality of the host. And Louis Pasteur that termed it, he talks about the quality of the host. And unfortunately, the medical system has put very little thought and very little emphasis on the quality of the host.

But hormesis is really this idea that when we're exposed to small amounts of environmental stressors whether it's dirt, dander, bad bacteria, viruses, yeast, parasites- different things like this- that it actually helps stimulate our immune system and in small amounts, as long as our body's able to adapt effectively, we're able to heal, overcome it, and get stronger.

And so what I always do is I always give people the example that it's kind of like exercise. So if we were to just sit down all day long, our muscles would atrophy. We're just lying on a bed all day long. We're not stressing our body. And so it's very easy on our body, but we atrophy and we get weak and we have an inability to adapt effectively.

So when we go and we exercise, it can be painful. In fact, the best type of exercise where we get, I guess, the greatest adaptation to is very, very painful. Very high intensity exercise can be very painful and very stressful on our muscle tissue; however, given the right environment the ability to adapt—get good rest, proper nutrients—our body's able to adapt and grow stronger. And so we're able to get stronger as a physical being.

You know, it's the same thing when we're encountering different stresses. I think every one of us has experienced either starting a new job or a new activity, and it's a lot more stressful. I remember years ago when I was in school, it was like the first day I would have a break.

Like, for example when you're in grade school, you have a summer break and then you get back. And then like the first week it was like every single day I'd have a headache. I would be so tired. I'd need a nap after school. I would be so tired because I wasn't used to the stress of getting up early, being up and having to be mentally stimulated all morning. You remember those days?

**Dr. Zielinski:** Oh, yeah.

**Dr. Jockers:** Yeah. And so it took me like a week or two to adapt to that. And I think everybody can relate to that. We've all had experiences for that. And so hormesis is this idea that when we're exposed to

environmental challenges, as long as we're given the ability to adapt effectively that we get stronger. We get more resilient.

And the super immunity book really uses that as an emphasis for our immune system. That our immune system gets stronger. It gets more intelligent. We actually boost what we call our immune IQ. I talk about that in the book. It's our immune intelligence. The ability for our immune system to recognize microorganisms that are not in harmony with our body, and to destroy them quickly and effectively with the least amount of residual damage to the body.

And so if we want to improve our immune IQ, we need to be faced with dirt/dander. Kids that grew up on farms, for example, they're exposed to a lot more dirt and dander. They have significantly lower risk of asthma and allergies than kids that grow up in the city where they're in a sterile environment.

And so again, it's a difference in immune IQ. The kids that grew up on the farm have a significantly higher immune system intelligence quotient. Their IQ is higher in that area. And therefore they're able to resist these inflammatory type of disorders and these kind of autoimmune or immune over-reactive disorders like asthma and allergy.

**Dr. Zielinski:** You know, it's funny you mention that. I have a cute story to share. We've all heard farmer's kids are the healthiest kids. So Elijah, our two year old, he and I and Esther and Isaiah were at the park. And I just let Elijah just do his thing. And he started playing in just a pool of water. And I'm like, okay, "Sabrina's going to get upset. He's getting wet." I'm like, "Okay, whatever. I'll be the fun dad."

Next thing you know, he plops on his butt, and he gets really wet. I'm like, "Ugh, I'm really in trouble". And then face forward he just does like a face plant and just starts drinking water, like the ground water. And I'm like, oh my God. As you know, our kids aren't vaccinated. They've never had a drug. And he didn't get sick.

I mean he had a little bit of runs afterwards, a little bit of a gastrointestinal problem. But we immediately incorporated some essential oils in his world. He nursed. He went home. He had some food. And I mean baby boy is good. I mean I didn't rush him to the hospital. He literally drank water in the park. Hey, that is his vaccination.

**Dr. Jockers:** That's right. That's right. So now whatever he experienced, so he took in a certain amount of microorganisms, right, probably a good percentage that aren't very healthy for his body. However, his immune system, because you were able to support his body appropriately using essential oils, giving him rest, putting him in a healthy environment, now his body's immune system was basically challenged.

Okay, so think of it like a Slinky so it got cropped. And it got set and then it was able to get stronger. It was able to ramp up and get stronger because it was primed. And so that's really the key there is priming our immune system. Not that we need to all drink dirty water or run around in an unsanitized environment or something like that.

But at the same time, we need to prime our immune system with exposure to dirt, dander, microorganisms, environmental challenges, and allow our body to adapt effectively so we can get stronger. And like a Slinky we prime.

We jump to the next level. So now we actually grow in life and so we grow in many different areas but particularly our immune system just gets so much stronger.

So the same microorganism that may have caused a challenge a year before, as long as we're supporting our body, our immune system laughs at it. It's like, "Oh, come on. You can't get me this time." And it just knocks it out completely.

**Dr. Zielinski:** So, Doc, is that what you meant in your book on how the immune system is a muscle?

**Dr. Jockers:** Yes, absolutely. So we got to think about it like a muscle. So in our society we think if we get sick we come down with a cold or a flu, we think it's an awful thing. And yeah the symptoms are definitely not pleasant. I'm not telling everybody, "Go enjoy those symptoms." However, what we really have to realize is it's actually a great thing. Oftentimes I've had a lot of my clients who are like, you know, they're like, "Man, I've been really sick." And I say, "You know what? This is awesome." Or their child will be sick.

And I say, "You know what? This is awesome." And I'm giving them a different mentality behind it because I'm like, "You know what? Right now the immune system is being challenged. And if we put this child in the proper environment, giving them lots of rest, proper nutrition, hydration, utilizing the right remedies like essential oils, high quality natural antimicrobials, things like probiotics and vitamin D and stuff like that that works to help create balance and homeostasis in the body, then the immune system is going to have what it needs to get stronger, to overcome this microorganism and help adapt."

So like a Slinky, again, it gets primed. And the priming aspect

is compressive, right? Think about a Slinky. We don't usually put emotions into it, but it's compressive. It's painful like when we're exercising. But then, boom! It's able to explode and go to the next step, the next level of life. So the immune system's stronger so the chance of that child getting sick like that again as long as, again, the environment is conducive, as long as the child continues to live a healthy lifestyle is much lower. And that's really the key.

And, Eric, one more thing I wanted to touch on because, again, I talk about this a lot in the book is there's three key factors. This is the other thing that we have to understand when it comes to either your susceptibility to developing sickness and what that looks like going forward in your life. It comes down to these things.

And you might be somebody, because I know I hear this from a lot of my clients, you might be somebody who says, "Well, I never get sick." I hear clients say that all the time. Well, "I never get sick." In fact, I was just talking to a restaurant owner the other day. He got really, really sick. And he was asking for some advice. And he's like, "You know what? I never get sick. One time in five years. But this time I got really put down." And so his body, of course, has naturally just a little stronger immune system. And so he's not getting sick very often. However, at every given moment, your susceptibility can change.

And the three key factors that we have to put into this equation that will end up leading to your susceptibility to developing sickness are number one your environment. So are you surrounded by stressors and toxins? Are you under more stress? Do you have a lot of toxins? Is your indoor environment even more toxic than it was before?

Have you moved recently and got a whole bunch of new furniture and didn't let it off gas and you've got a whole bunch more chemicals that are coming off in it? Are you taking medications? Are you eating a bad diet? Things like that. So your environment, your lifestyle. So what's your lifestyle like? Are you eating the right foods? Are you sleeping well? So these types of things play a huge role.

And then the third thing is your metabolic capacity. And that can change at any moment, but your metabolic capacity is something that grows like the Slinky when you're providing the hormesis stress. So when you're exposed to different things rather than living in a sterile environment, you improve your metabolic capacity when you do things like, for example, exercising regularly helps improve your metabolic capacity even from an immune perspective to overcome viruses, bacteria, infection- different things like that. When you sleep well.

So it's all about those three key factors. What's your metabolic capacity look like right now to handle stress? What's your environment? What's the environmental factors going on around you? And what is your current lifestyle? What kinds of things did you do yesterday, did you do today, that will impact your overall ability to adapt, create balance and homeostasis in your body?

**Dr. Zielinski:** You know, Doc, in your book you mention lifestyle activities that cripple the immune system specifically. And I wanted to talk about a couple. I wanted to name and then we're going to go back. These are key. Of course you mentioned sugar and sleep. And I found that four really resonated with this discussion.

Number one, first and foremost, destructive emotions and next certain medications, poor hygiene, toxic chemicals. And I want to talk about those. And if you could just talk about the significance of emotional wellbeing in immune system strength.

**Dr. Jockers:** Yeah, so critical. So [inaudible] thinking, things like depression, sadness, anger, these things all they create inflammation and oxidative stress in the body. And so bitterness, unforgiveness, low self worth, these things actually shut down your natural T-suppressor cells. And those T-suppressor cells inhibit the overproduction of inflammatory activity in the body. T- suppressors help reduce autoimmune activity, chronic, inflammatory activity in your body.

And so I think about it from like an ancestral perspective. When you are severely, let's say, when you're really angry, your body thinks that you're being attacked or you're going into war or something along those lines. And you're at a greater risk for developing some sort of an infection. Infections, systemic infections, infections that go throughout our whole body have killed more people in the history of mankind than anything else.

And so your body's hard-wired to prevent against a systemic infection from destroying your body. And so it increases natural killer cell formation. Different just overall you create an immune imbalance where your body promotes inflammation throughout your whole system.

We know the average person has over 30,000 thoughts a day. And research has shown that fear all on its own triggers more than 1,400 known physical and chemical responses and activates more than 30 different hormones. And so there's toxic waste that goes on

with that that really malcoordinates the immune system. And so we look at our healthy immune system, it's well-coordinated. Again, this idea of immune IQ is a well-coordinated, balanced immune system where we have balance between, for example, different cytokines and different T-cells like T-helper cells and T-suppressor cells that create balance and coordination.

And so we know destructive emotions are going to lead more inflammatory processes and a lowered resistance to overall, it's going to over-stress our body and therefore, over time, it's going to lead to resistance. But a lowered ability to resist developing things like colds, flus, fevers, and different issues like that.

**Dr. Zielinski:** So for those people who haven't heard of the Vanderbilt study, the Vanderbilt Medical Center, which is a premier system in Tennessee, they tested essential oils in their hospital to see how that had an effect on the emotional wellbeing of their staff. And I just want to throw out a couple statistics, and then, Doc, I have a question for you.

**Dr. Jockers:** Yep.

**Dr. Zielinski:** So before thirty days of essential oil use...And they used mood enhancing oils a lot, very common, the citrus oils, the lemon, the orange, the bergamots, those are mood enhancing and boost mood, where lavender would just create a sense of calm and peace.

So when they're using different oils, before the essential oils were used, the staff—we're talking nurses, the cleanup staff, the janitorial staff, the doctors— 41% of them indicated that they had stress very often. After 30 days of use, only 3%. Just think of that decrease. Before the use of essential oils, the staff reported being overwhelmed 25%

of them where after, just simply diffusion where you just have a diffuser just going on in the front desk or in various rooms, 2% of people felt being overwhelmed at work after using essential oils just by diffusing it.

And this is interesting, too. The ability to equip and handle stress. 13% of people, the workers, the staff, felt that they were equipped to handle the stress of their work life where after essential oils, they experienced 58% of the people. That's an unbelievable statistic. Unbelievable.

And for you, Doc, because I know that you are an energy junkie. 33% before diffusing, they reported that they experienced optimal energy where 77%, I mean over 150% increase of people at the hospital reported optimal energy just from diffusing essential oils. So, with that, in addition to essential oils, what can people do to really counteract destructive emotions?

**Dr. Jockers:** You know, that study is huge. I mean if you think about even just where that took place at a hospital. Doctors and nurses are some of the, I mean they've got highly stressed jobs. They're people that actually have some of the lowest job satisfaction rates. And so you think just taking into account that setting, and that's gigantic.

So what are things people can do on a regular basis? Well, we got to start with just simple things like good sleep cycles. Really prioritizing sleep is huge. And so obviously if you have insomnia, things like that, that needs to be addressed and really working with a good functional medicine practitioner or just really taking on some natural strategies. I know I've got an article on my website about ten natural strategies to improve your sleep.

So just natural strategies. If you continue to have problems, really talking with the right type of doctor to help you with that. But prioritizing sleep and really trying to get eight hours of high quality sleep, ideally being in bed by 10:00 P.M., no later than 11:00 P.M. on a regular basis can be huge in your ability to handle and adapt to stress for good high quality emotions and emotional intelligence. Good sleep is huge. I know for me that's probably one of the biggest factors for me on a regular basis.

Healthy diet. So keeping sugars and grains out of your system as much as possible, things that turn into sugar. And so there's a lot of research done on sugar effecting the immune system. And there's something called a phagocytic index which is really the ability of white blood cells to phagocyte or destroy bacteria, viruses, yeast, these opportunistic microbes. What we know is that a blood sugar level of 120 or more—so like diabetes is a fasting blood sugar of 125. But most people in society between meals they'll have breakfast like a bowl of cereal or something.

Or maybe even for lunch have a sandwich and their blood sugar, boom, it will jump up to 200 and they won't even know it. And it will actually stay in that range for a good period of time. That actually reduces the phagocytic index, the ability of the white blood cells to destroy these bad microorganisms by 75%. So it significantly reduces their ability to fend off bad microbes. So huge.

Other things we want to do are, if we're going to take the sugar out, what do we replace it with? Let's get good fats in, things like grass-fed butter which has got butyric acid which is real powerful for the immune cells of your body, very good for your gut. It's got things like CLA (conjugated linoleic acid), which

helps to stimulate your immune system. Things like coconut oil with lauric acid which is an antimicrobial. So good fats are key.

Bone broth, which has got compounds that help produce collagen in your body. Glycine helps strengthen the gut. You think about bone marrow, when you're making bone broth, you're actually getting the marrow, which is within the bone out. And the bone marrow is where the white blood cells are created.

So you think about it, I mean that old wives' tale of chicken soup, right, kind of the Jewish folklore of chicken being not just good for your soul but also good for your immune system. That idea really came from this bone marrow. The bone marrow, again, has got, in a sense, stem cells to help produce white blood cells. It's got all the raw materials to help produce healthy white blood cells in your body. And so doing things like bone broth from pasture-raised chickens or grass-fed beef and things like that, very, very powerful. So from a nutrition perspective, we want to use things like that.

We can use medicinal mushrooms. We can use things like garlic, ginger, oregano. Essential oils are powerful. We can do things like oil pulling where you just put it in a little bit of coconut oil. You can put essential oils in with it in your mouth. And you swish for ten/fifteen minutes, and that reduces your microbial load.

And this is a key topic to think about as well is that we've got so much microbial organisms in our body, ten times more than the cells in our body, and particularly they load up in kind of the moist surfaces of our body so just like our mouth. And so those microbes and their waste products, even when they're healthy microbes, they provide a stress on our immune system, and I call it the

microbial load.

And so when we're doing things like oil pulling and good hygiene—brushing/flossing our teeth, showering regularly, doing things like even an infrared sauna helps with this, dry brushing our skin, exfoliating our skin— all this helps to reduce this microbial load. And that helps strengthen our immune system.

And so the more that we can reduce that, the less load and stress on our immune system and the better our immune system is going to be as well as really just our energy and our quality of life. So oil pulling and all these different things, and I talk about it in the free book that I'm giving the audience, Super Immunity, all these different strategies that you can apply to really help strengthen your immune system and help your body adapt to stress and regain balance and homeostasis.

**Dr. Zielinski:** So one thing I can't stress enough for everyone listening is going to DrJockers.com and just taking advantage of just the wealth of information that Dr. Jockers is sharing. I mean his health tab, his fitness tab, his recipe tab.

There's so many resources and even I see you have a free signup where you're giving people a SuperCharged Healthy Recipe book. I mean that's fantastic. So that's the one thing I just love about you, David, is that you're not giving the fish. You're giving people the fishing pole, and that's so critical. We need to empower people. Like you said, as a doctor, you're a teacher. You're a guide.

And for those of you who want some good recipes ideas, I mean my wife and I we just love them. And we've been taking advantage of them. And just use them, love them, and enjoy them. And I want to wrap up the conversation,

Doc. I want to talk about the one, arguably the most influential and easily removed—under the proper guidance—activity that can cripple the immune system are using certain medications.

You mentioned before earlier in the talk about the ubiquity of medications, that they're everywhere. And 95%—I never knew that's—95% of people medications are being prescribed incorrectly. Just want to talk a little bit about, in your opinion, on why you listed using certain medications as a top ten lifestyle activity that cripples the immune system.

**Dr. Jockers:** Yeah, absolutely. And so, just like I said before, 95% of the medications that are prescribed don't have to be prescribed that if somebody were to change their lifestyle and apply some natural, herbal remedies such as essential oils, they could overcome their health challenge without the use of that medication.

And that is huge to understand because medications, unfortunately, are ripe with a lot of different side effects. For example, things like Ibuprofen, aspirin, Advil, NSAIDS (non-steroidal anti-inflammatory drugs). These are things that you can go to Walgreens and buy inexpensively, and people do. And the sales go up every single year. And these are the most commonly used medications.

In fact, most people in society have these things in their house. These drugs, they deplete key B vitamins in your body. They hamper your body's ability to do something called methylate which is really a key factor with protecting your DNA. They also, many people know this, they affect your gut lining and your stomach lining so they actually increase your risk of developing things like acid reflux, H. pylori infection, ulcers. They reduce the

binding of the tight junctions in your gut lining. And so therefore the gut lining is more permeable which can increase your susceptibility to leaky gut syndrome which leaky gut syndrome is associated with autoimmune disease. And so taking those medications on a regular basis can really hamper overall digestive function.

And so these things are not meant to be played with. There's a time and a place for them but definitely not something we want to be using regularly. Antibiotic usage, we know now today that one of the biggest epidemics is antibiotic-resistant strains of different bacteria and different microorganisms.

And so MRSA, for example, is one of these common ones whereas you have things like oregano oil, essential oil of oregano, which has been shown to be a powerful reducer of MRSA staph aureus is this type of bacteria, staphylococcus aureus that is resistant to many different forms of antibiotics.

And so the reality is the more that we can get away from using medications and start to really focus on natural lifestyle, natural herbs, things that are in nature that we can find in nature that work in harmony with our body and help bring us back to a state of homeostasis and balance, the better off our health is going to be.

And it's really, really critical is that we should never be thinking medications first. Medications should be way down the road. Let's look at lifestyle factors. You know, simplest, easiest things you can do right away are change your diet, change your sleeping patterns, get outside more, get sunshine and change your thought processes. Do the best you can to reduce stress. Really, really focus on gratitude or love, healthy, strong relationships.

These are things that don't cost you anything other than just a general awareness and just making sacrifices and making changes. Let's start with that. Then let's go with inexpensive, natural remedies. Things like vitamin D, essential oils, probiotics, maybe omega three supplements, stuff like that. Let's try that approach, right?

If we're still not getting over the hump after spending a good amount of time doing those things, let's find a functional medicine doctor, a good chiropractor perhaps, that could look at our spine and nervous system. Let's look at a functional medicine doctor that can do some detailed blood work and functional testing to look at what we're toxic in, what we're deficient in, and let's address those things.

And let's save the medications, the surgeries, the medical devices for last cause just emergency crisis situation. And that's really the idea we should have when it comes to our health care approach.

**Dr. Zielinski:** You just put something that we learned in months and months and books and books just in the five minutes. That was so profound, folks, because when you read Dr. Jockers' book, he has the top five immune strengthening herbs. And he includes garlic and oregano and ginger, tumeric, and green tea. I mean, this is medicine. And we need to realize that food is medicine. And when you take that approach, going to a synthetic version is never, ever, ever the solution. If anything, it's just going to be a Band-Aid.

So to empower people that, you know what? You can be Dr. Mom and Dr. Dad. And having someone like you, reading your books, following your website, and if you're local to Atlanta, Dr. Jockers owns Exodus Health Center which is in

Kennesaw, Georgia. Visit him. Come by. Receive just some one-on-one support. He's got a great, trained staff who all on tune with what's he's doing. And it's just about, you know, we can't do this alone. Amen, Doc? I mean we're in this together.

**Dr. Jockers:** That's right. Yeah, absolutely. I mean the reality is that we want to stand on the shoulders of giants. So we want to look at like many of the people in this summit, these are people who have spent years and years studying and just had a passion, an innate passion, that God put within them to learn as much as they possibly can about natural health.

And so if you're out there and you're listening and maybe you're just starting your natural health walk. Maybe you've been on this walk for a while. Perhaps you're seeing great results already or maybe you've tried different things but you just haven't gotten the results that you wanted. Wherever you're at, you want to stand on the shoulders of giants.

You want to stand on the shoulders of people that have been studying this for years, that have dealt of hundreds and hundreds and hundreds and maybe thousands of challenging cases. And with today's technology and, Eric, you taking the time to really put on an incredible event like this, it allows us to do that. It allows us to really feed off of each other, get as much information and inspiration as we can so we can take the next step in our health journey.

Ultimately I believe that our health journey is really part of our spiritual story. It's really a story that God's given us. And it's a part of really learning and understanding who God made us to be, and it allows us to really grow closer to our spirit and gives us just a greater sense and respect and honor for the

power that God put within us.

And so you know for somebody like myself. I have struggled with health issues. If you're out there and you've struggled, in my life I'm only thirty-three but I've struggled with very severe irritable bowel syndrome. I had skin cancer at one point in my life. And I know that those things actually I look back at them and even though they were great challenges and great stressors at that time in my life, that they've actually been the greatest, in a sense, push to make me who I am today. That they've actually helped elevate my life and opened my eyes to a new way of thinking and a new way of living.

And I couldn't be more grateful for that. And so wherever you're at in your life, I would just take that advice that your testimony, I should say your tragedy is your testimony. Whatever you're dealing with is really meant to be a great testimony to honor God and to open your eyes and your perspective to a new way of life.

**Dr. Zielinski:** Awesome. Thanks again, Doc. And I want to thank you all for tuning in to the Essential Oil Revolution. And if you have found this content helpful, remember you can take it home with you. Just click on the banner beside or below for more details. And God bless. Talk to you soon.



# How to “Disease Proof” Yourself

James Maskell with David L. Katz, MD/MPH

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*The purpose of this presentation is to convey information. It is not intended to diagnose, treat, or cure your condition or to be a substitute for advice from your physician or other healthcare professional.*

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**James:** Hello, and welcome back to The Evolution of Medicine Summit. This is James Maskell. And I have the distinct pleasure of being today with Dr. David Katz. Now, Dr. David Katz is probably familiar to a lot of you for different reasons. And if we were going to give Dr. Katz’s full bio, we’d probably have to be here...Actually it might take up the majority of the interview today because Dr. Katz has been on a mission in preventative health for it seems like decades.

Dr. Katz has his degree, initially, from the Albert Einstein College of Medicine, his masters of Public Health from Yale and is board-certified in preventative medicine. He’s the editor-in-chief of *Childhood Obesity* and involved with the American College of Lifestyle Medicine. President to a number of non-profits. Also, introduced and is the principal inventor of the NuVal nutritional guidance system, which you’ve probably seen in your local supermarket. Has published nearly 200 scientific articles and is now working in New Haven, Connecticut at the Griffin Hospital with internal and preventive medicine program and has been all over TV, *ABC News*, *New York Times*.

So you should have heard of Dr. David Katz. And if you haven’t, then I’m glad that I’m bringing him today.

Dr. Katz, this is a bio of a man on a mission to change health in America. What is the driving force of the passion that keeps you moving forward today to do all of these things and to be on an event like this?

**Dr. Katz:** Well, James, thanks for the kind introduction. It’s pretty obvious. I’m a person. And whatever we do professionally, we’re all people. We all feel the same things. We all have the same kinds of hopes and aspirations for ourselves and the people we love. And in my world of preventive medicine, I know very well that we have the capacity if we turn what we already know into what we routinely do, to eliminate just about eighty percent of all of the chronic disease in the world. So that’s heart disease, cancer, stroke, diabetes, dementia.

And I’ve got skin in the game. I think about the people I love who have been affected by those conditions. And then I think about the friends who have people they love affected by those conditions. And I can’t help but be a human first and just think about the loss, the sadness, the anguish that we all get caught up in that doesn’t need to happen eight times in ten.

Now, if you’re not inspired by something like that, I’m not sure what would inspire you. So there’s this incredible opportunity to improve the human condition. You know for many of us to simply

have better lives: less sadness, less loss, less anguish, more years in life, more life in years. You know, to have that for ourselves and to have that for the people we love. And so I look out and see that opportunity. And knowing that it’s potentially within reach just inspires me every day to keep trying to get us there.

**James:** Absolutely. And I know, as well as the books and everything that you’re doing in America, you’ve also been very active on the Internet, things like LinkedIn. It seems like this is the spread of this chronic disease has almost started in America and is actually moving out to other countries now. So how important is it for us to start to communicate some of these best practices outwards, as well?

**Dr. Katz:** This is a global issue for sure, James. And it may very well be that we here in the U.S. can be proud of being the epicenter of the mess that modern epidemiology has become. But we’ve been very effective at exporting it. And it’s particularly tragic because there’s a study called the Blue zones that looks all around the world at the populations that live the longest, have the least chronic disease, tend to be the happiest. And instead of importing those lessons to the United States and making that our culture, we export around the world McDonalds and Coca-Cola and help everybody get fat and sick like we are. So, absolutely, it’s a global issue.

In fact, we have information from the World Health Organization that there are more overweight and obese people on the planet than there are hungry people. Now, throughout history, hunger's been an issue. And it still is. But obesity's now a more prevalent issue even than hunger.

And despite the fact that we know that culture could be the medium of lifestyle is medicine, again, we're not doing an effective job of learning the lessons from the cultures to get this right. We are overtaking them with all of the problems of modern culture that tend to produce both obesity and chronic disease.

**James:** Absolutely. So I'd like to get into some of those best practices and just start with this for everyone listening. We've call this segment, "Disease Proofing Yourself." And that was the name of one of your books. And I'm really glad that there are books that are coming out now with really punchy titles, like *Disease-Proof: The Remarkable Truth About What Makes Us Well*, or recently Dr. Bland's *Disease Delusion*. These are book titles that really grab people's attention and say, "Hey, this is something that we could be doing." So what do we learn from those Blue zones about disease proofing? And what can we learn from them first and foremost in America?

**Dr. Katz:** Well, first of all, thanks about the book. So *Disease-Proof* is a good title. And my editors at Penguin get the credit for that. They came up with it. Although, that really is what the book is about, how we could use lifestyle as medicine to immunize ourselves against eighty percent of all chronic disease, reduce your personal lifetime risk of heart disease, cancer, stroke, diabetes, dementia by eighty percent and get similar gains at the population level.

But although the title may be punchy here, James, there really is a problem. Dr. Bland's book may or may not have the same problem. But the problem for me as an author— and having the same hope that every author has to get on the *New York Times* bestseller list—is that what tends to land you there is a magical promise. So most of the books that are guaranteed to get on the bestseller list tell people it's just this one effortless thing you need to do. And the next thing you know, you'll lose the weight or find the health. You know, essentially there's magical pixie dust on page 315. I don't deal in magical pixie dust.

Basically, what the blue zones teach us is that you actually have to live well. You actually have to eat well. You have to be active. You have sleep well and enough. You have to, obviously, avoid tobacco. You have to manage the stress in your lives. And you need strong social bonds.

I consider the three predominant influences on health: feet, forks, and fingers. And by that I mean physical activity, dietary pattern, and not holding cigarettes. But the next three would be sleep, stress, and love. So I think everybody can take that away from today's discussion: feet, fork, fingers, sleep, stress, and love. Get those six right. Be active. Eat well. Don't smoke. Get good sleep. Mitigate the stress in your life. And have strong connections to other people. Frankly, everything else is vanishingly less important after that.

The blue zones get that right. Eating well is just part of those cultures. We're talking about Crete, Okinawa, Seventh Day Adventist in California, other populations around the world. But many of them have plant-based diets. Many of them have Mediterranean diets. They do a lot of walking. So they're physically active. They're not necessarily in the gym pumping iron. But just motion

is part of their routine cultural norm. They tend not to smoke. And they tend to have a more leisurely pace to their lives, less stress. And then they have a strong sense of community.

So looking at those examples, the question is, "How do we apply that in the context of the crazy lives we tend to lead?" And we can. But it's skill dependent. And so my basic argument in *Disease-Proof* is you need more than willpower. You need skill power. And skills can be learned. And my mission is to try and teach the ones that I have. I'm an expert in this space. I'm supposed to have those skills. Skills can be shared. Skills can be paid forward.

**James:** Yeah. Exactly. It's interesting you used the word immunize yourself earlier because traditionally anything to do with health has been something that you would have done to you by a doctor. But this is something that's outside of sort of the medical industry.

**Dr. Katz:** Self-immunization. I think that's a key point, James. If anything, we tend to impart—and, of course, I am a physician—but I think we tend to impart way too much power to physicians and the so-called healthcare system. The healthcare system is really mostly about treating disease. If we want to talk about building health at its origins, well then, frankly, each of us needs to be in charge.

We do that in the places we live and love and learn and work and pray and play—the places we actually live our lives and spend our time—not in clinics and not in hospitals. And the power over all of that resides not with doctors and not at the cutting edge of biomedical advance. But it's in our own hands. It's really the choices we make every day.

And the other thing that's important to note in the mixt here, James, is

that well more than a decade into the genomic age now, we know that DNA is not destiny. We've gone looking for the past ten years to try and identify the genes responsible for heart disease, cancer, stroke, diabetes, dementia. All the stuff that tends to affect us. And there is no single gene responsible. It's a whole mix of genes. But what proves to be really important is not the genes you have, but the experience you have in your life that influences the way your genes behave. When we change our behaviors, it affects the behavior of our genes. So while DNA for the most part isn't destiny, it turns out to a very large degree, dinner is. The things we do every day influence the behavior of our very genes. So really powerful opportunities for us to be the doctor, to immunize ourselves. And yes, there's a role for medicine. And yes, there's a role for disease treatment, of course. But when it comes to building health, we're the cooks. And it's our kitchen.

**James:** Yeah. Exactly. And it sounds like that's a much more empowered situation to be for patients. And patients aren't typically used to being empowered in this relationship. We've had a sort of patriarchal system. And it's evolving towards a system where the patient is in charge and looks for support from the medical community rather than sort of waiting and being reactive.

**Dr. Katz:** Well, I'd like to see more of that, frankly. And, again, in the blue zones...And this people can Google the blue zones. And you'll see the work of Dan Buettner who wrote a book on this topic and studied these cultures around the world. But you look at the people who lived the longest, have the most years in life, who had the least chronic disease. So they have the most life in years. They tend to be the happiest because healthy people have more fun.

And when you go looking for the reasons, they're not saying, "My doctor's so fantastic. Or I get really great clinical counseling." Maybe that's true. And again, I am a physician. I take care of patients. All of that stuff really does matter. But, essentially, the answer is culture is the vehicle. And lifestyle is the medicine. Or culture, if you will, is the spoon.

And then it's just the way we live every day. They need doctors a whole lot less. It's not that doctors are treating their diseases so well. It's that they're not getting the diseases in the first place. And that's better. It's just better. So absolutely, we really want to own this. And we can.

And from my perspective, James, there are two ways really to get there from here. One is to change the world. A lot about the modern world is conducive to getting fat and sick. And so we could change the world so that it's more normal to eat well and be active. And everywhere we go we have only good food choices. And our schedules are a little more hospitable. And we sleep a bit better and all of that.

But we can't just keep waiting on the world to change. So the other option is to change ourselves, to empower ourselves to deal effectively with the world as it is. And, again, I have a skillset. I'm a preventive medicine specialist. It's my job to know how to be healthy. And I do my job well. So I know how to be healthy. I eat well no matter what. I'm physically active no matter what. I prioritize feet, forks, fingers, sleep, stress, and love. And I'm a beneficiary of it. My health is excellent. My fitness is outstanding. And it's not because I'm a swell guy. It's because I've got a skillset, just like a pilot has a skillset to fly a plane. So those skills can be learned.

But one of the critical things, James—and I hope our discussion today helps advance this mission—one of the critical things is we've got to grow up and be serious about health and weight. We have to stop waiting for magical pixie dust to come along. I really grow tired of the fascination with the next big fad diet, as if somebody's going to come along with some magical formula to fix everything. We have to take this seriously. We have to give it the respect it deserves. And then the world is ours.

**James:** Yeah. Well, I think that's such a good point. And I'd love to get into some of those dietary things because it's mainly diet that's seen as the pixie dust. Although, we can certainly talk about some other things.

But I just wanted to go back to, you said there were two ways to really change the world. And one is to be proactive. And one is to wait for the world to change. But I would really say that there's only one way because the way that the world changes is in response to the changes that we make. Every time you buy a packet of Oreos from the supermarket, the amount of information that goes out from that purchase, i.e. where Oreos should sit on the shelf to the producers and the people who make the products that go into Oreos, you're sending out price signals with every purchase that you make.

So in making those changes for yourself and choosing different foods and choosing different purveyors of food, moving to farmer's markets, buying local. Those kind of things. You're actually sending signals into the market that this is what people want. And then the world changes as a result. So it seems to me there's only one way right. Really?

**Dr. Katz:** I think it's an excellent point. And it's one I make often. So, essentially, what I was saying, James, is again, we can change the world or change ourselves. But I completely agree with you. When we change ourselves, it changes the world. And you know maybe nobody ever said that better than Margaret Mead, "Never doubt that a small group of thoughtful and committed citizens can change the world. Indeed, nothing else ever has." So when we make informed food choices, when we vote at the cash register, we are those thoughtful and committed citizens. I completely agree with you.

And, in fact, I am devoted in my career to both empowering people so that they can change themselves and overcome the things that make being healthy difficult, but also to essentially change our collective demand, for example, for better food and thereby change the supply.

A lot of my colleagues work directly on changing the supply. They want legislation. Or they want policy change. And I support a lot of that. You know, things like taxing soda. But I think the less objectionable way to change the food supply is to change the food demand. So we completely agree. I think if we can empower people to make better choices regarding feet, forks, fingers, sleep, stress, and love. And I agree with you. We can focus, in particular, on diet.

When you add up all those better choices, they come to be a change in the food demand. And the one thing that most effectively changes the food supply is not war. And it's not policy. It's trying to keep the customer satisfied. You change the food demand, you very reliably change the food supply. We've seen that happen many times.

At the height of the Atkins Diet craze, every supermarket in the United

States sold low- carb food. They still do. But those low-carb foods predominated. There was no law.

There was no lawsuit. There was no policy. There was no requirement. They just knew that shoppers want this. And they put it very prominently on the shelf. We could similarly show that what we want is highly nutritious food. And we won't buy glow-in- the-dark junk. And then they would stop selling glow-in-the-dark junk.

The one critical thing for me to add at the end, James, is this, "The choices we make are determined, in part, by the choices we have." And one of the great challenges in changing the demand is that there are forces conspiring against us that are pretty powerful.

And just quickly, another book worth mentioning is *Salt Sugar Fat* by Michael Moss. Michael Moss is a Pulitzer Prize-winning investigative journalist. And what he writes about is how big food companies have hired teams of PhDs to engineer food that is all but addictive, to engineer food that we can't stop eating. And so there are these influences on us that very smart people are conspiring to put on us that affect our behavior. And so, in essence, they're affecting our demand. And then our demand is affecting supply. And it's this circle. And they're sort of in control of it. We've got to break out of that chain if we are to exert the effect we want.

**James:** Yeah. Absolutely. Well, why don't we delve into those six areas then because we're going to cover those six areas really on this summit. But I'd love to just go deeper into those. You said the first one is feet. As a physician or as someone who understands this, what are your main recommendations for people to take responsibility for that?

**Dr. Katz:** So that refers to physical activity. And I would agree with you. Really, the only controversial one on the list is for us to diet. So we should talk mostly about that. I think most people understand that being active is good and being sedentary not so much. We have more and more evidence that just the amount of time we spend seating every day, it is associated with the reduction in life expectancy and quality of life. So really, just being up and moving is good. Higher levels of physical activity are good to a point. You can actually over-exercise, too.

But the key issue for me here is that it's interesting that we seem to need things like pedometers to help us count our steps. And I don't object to that. I think anything that helps us get there from here is good. But I'd note the following, James. You see somebody in a wheelchair. And I think the native human reaction to that is to sort of feel badly and think, "Gee, I hope maybe it's temporary and they can get up" because it's a good thing to be able to walk and run and jump and dance. And yet, most of us who have perfectly intact legs and can walk and run and jump and dance never do!

And so we think of exercise as an, "Oh, woe is me." And I've got to get a pedometer to count my steps. My suggestion is how about we count our blessings. We have this native animal vitality, this capacity to move, to move in ways that are fun, to do recreational things, whatever it is you like to do, bike or swim or ski or dance. So I think we have to stop looking at exercise as this onerous thing. Recognize that exercise is any way of getting motion into your daily routine, to let this native animal vitality of ours out of its cage and then to relish its exuberance. We're endowed with this vitality that we tend to neglect until it's completely gone. It just feels good to be in

motion. So motion should be part of our daily routine.

Now, the other thing I would say is given our schedules, we have to devise strategies to fit fitness in. And we have a program freely available called A-B-E for Fitness—Activity Bursts Everywhere. People can just Google A-B-E for Fitness. Or you can post the link for them. And this is a program of brief bursts of physical activity you can do while in your office throughout the day. And we need tools like that. So whatever your day is like, whether you have time for a hike or not, whether you have time for a walk or not, whether you can get to a gym or not, whatever your day is like, there is a way to fit fitness in. If you're a truck driver and you never get out of your truck, there are ways to do isometric routines while driving your truck.

And we have evidence from a recent study that even just those isometric routines where you tense one group of muscles against another can be associated with reductions and mean arterial pressure and improve your overall cardiovascular health.

So there are ways to get there from here. And we just need to be creative and fit fitness in whatever way it works. And then we need to count our blessings when we have the opportunity to move. It's a good thing.

**James:** Absolutely. And you've really teased up one of the other speakers in the summit, Darryl Edwards, who's a friend of mine from the U.K. who is talking about the evolution of fitness. And he really says exactly the same thing is that this should not be something that should be done in the gym in certain hour increments. But how do we actually make this the evolution of fitness is really to engage in it every day as part of our daily life.

And I think that's so true. I think there's some great starting points there.

Let's get into diet now. And I would just say a couple of things about this is that it's funny how you said that people have the ability to move and don't. I was speaking to someone yesterday who was talking about gluten. And they were saying, "Well, it's in wheat and barley and rye." But he said, "But you only really have to care about wheat because no Americans are eating barley or rye." I thought that was quite funny with regards to your last comment. But, look, you've been so right about this fad diet issue where there's always a new fad. There's always something that's going to get you there quicker.

If we learn from the blue zones and we learn from the science, what are the underpinnings of a diet that allows us to mitigate, remove, or reverse chronic disease?

**Dr. Katz:** Food, not too much, mostly plants." And I'm quoting Michael Pollan. But that's really the truth. First of all, James, I'm just finishing up now the third edition of my nutrition textbook for healthcare professionals called *Nutrition in Clinical Practice*. This is five hundred page comprehensive textbook that has to run the gauntlet of a jury of peers. It's used in medical schools. It's used by physicians in practice and other health professionals. And in the third edition, I think we have something very close to ten thousand scientific citations. And so I have that view from altitude.

And then I was recently asked by Annual Review of Public Health, which is as the name suggests is a peer-reviewed compendium of major topics in public health reviewed once a year. They asked me to write a paper, "Can We Say What Diet Is Best for Health?" And

I also recommend that to anyone listening because the PDF for that paper is freely available to all. You can just download it. So if you type into Google, "Annual Review of Public Health," and go to the Journal's home page, you can find a link to, "Can We Say What Diet Is Best for Health?" It's featured on the home page.

So my job there was to review the literature without bias. Not to fall in love with any theory about vegan diets or Paleo diets or Mediterranean diets. And answer that question, "Can We Say What Diet Is Best for Health?" And the answer is yes and no.

If what we mean is, "Can we say what basic theme of eating is best for human health?" then, absolutely, yes! And it's real food. Not too much, mostly plants. That's true in all of the cultures and all of the studies. Whether the focus is on low-glycemic diets or on high protein diets or low-fat diets or plant-based diets or Mediterranean diets or Paleo diets—when they work well and improve both weight and health—it's real food. Not too much, mostly plant.

If the question however is "Can we say what very specific diet in the never ending beauty pageant is the single best?" meaning can we say that an optimal vegan diet is better for human health than an optimal Mediterranean diet or than an optimal Paleo diet?" then the answer is absolutely no because those studies have never been done. There's never been a study that has taken neonates and randomly assigned them to be either Vegans or Paleo eaters for their entire lives and then follow them for a hundred years to see who does the best. For obvious reasons, those studies have not been done. And they're not likely to be done any time soon.

So when you look at the evidence we have, it argues very strongly for a variety of diverse plant foods. And that means vegetables, fruits, beans, lentils, nuts, seeds, with or without whole grains. I'm a strong advocate for whole grains. But you could have a healthy diet and leave them out as long as you're getting plenty of fiber from these other sources—with or without fish and seafood, with or without eggs, with or without dairy, with or without lean meats—but reliably excluding stuff that glows in the dark, reliably excluding highly processed meats, with an emphasis on a healthy array of nutrients, not by focusing on nutrients.

The way you get to healthy eating is not the focus on just sugar or just fructose or just sodium or just saturated fat or just omega-6 fat. If you focus on a variety of wholesome foods and reasonable combinations, as all of the world's healthy cultures do, all of the nutrients take care of themselves. And the nice thing about this, James—and this is what the research really shows—is that you're immune again, to use that word, to any serious nutrient problem when you get foods and food patterns right.

So for instance, if you eat a Mediterranean diet, you don't have to focus on avoiding sugar because you're eating mostly foods that don't have added sugar. And it just takes care of itself. Similarly, you don't have to focus on saturated fat because there's a lot of saturated fat in grain-fed cattle, for example, or if you have a lot of dairy. But you eat a Mediterranean style diet and what you tend to get a lot of is mono and saturated fat and a balance of unsaturated fats, including omega-3s. It just happens by virtue of eating the right kinds of foods in the right combinations. And it's incredibly powerful medicine. Study after study after study shows amazing benefits.

I mean, you look back. For example, these days there's a lot of negative response to the concept of low-fat eating. But the reality is when low-fat eating didn't mean Snackwell cookies, but it meant a diet of mostly plants, the studies showed phenomenal things, like the work of Dean Ornish showing the reversal of coronary arteriosclerosis and the prevention of heart attacks.

So, again, the basic theme of healthy eating for homosapiens, extremely well-established, incredible volume of research evidence, amazingly consistent, populations all around the world, which specific diet is best? There is no answer to that. And I think that's a good thing because what it does is give us the opportunity to choose. Do I want to be vegan or not? Do I want a Mediterranean or Paleo style diet? And that gives us the best opportunity to love the food that loves us back because we get to choose the variation on the theme that works best for us and our families.

And, frankly, it's that combination. Loving the food and having the food love us back that makes this sustainable because then you get pleasure from eating food you like and pleasure from having health that you like.

**James:** It sounds like there's been some serious ongoing placebo benefits to that for everyone, as well?

**Dr. Katz:** Placebo benefits, you mean from the pleasure of loving the food?

**James:** Yeah.

**James:** Well, I don't know that it's placebo. But, yeah, in essence, I would say that pleasure, first of all, is a source of health because just being happy and enjoying what you're doing tends to foster

health. But the other thing I would say, James, is that the very reason for health—the reason health matters—is because it contributes to enjoyment in life. It's not like we all ought to be healthy because someone's wagging a finger at us and saying, "There's a moral imperative to be healthy."

You ought to be healthy because it's the right thing to do. I think at times we get caught up in that. But when you think about what health is for, I think health is for living.

Health is a currency you can spend on having a better life. The more health you have, the more you can invest that in doing the things you love to do and having more enjoyment.

So absolutely! I think the pleasure we get from food needs to be part of the equation. But my wife and I have longed argued for loving food that loves you back. I think you can have both.

One of the things that can help you get there if you're not already there is what I call taste bud rehab. And there's a whole section in *Disease-Proof* on that. And what I mean by that is that taste buds are adaptable little fellows. When you don't let them be with the foods they think they love, they learn to love the foods you're with. So you can learn to get used to more nutritious foods and come to prefer them. And you have to invest in a brief period of transition. But it's really not all that hard to do.

**James:** Yeah, I've done that myself. And I've realized that. There was a time in my life where I was for about six months after the university, I was an investment banker eating a lot of crap. And when I moved to America and started working in the field of alternative medicine in 2005, there was definitely a period of

adjustment. And I have to say, I can't drink a Sprite or a Coke now, at all. It just tastes absolutely disgusting, whereas, there was a time in my life where that was the nicest thing to drink on a hungover Sunday morning. And so that's a change in my taste buds.

And so now I have an eleven months old daughter—she's over a year now actually—and she eat greens and all kinds of things and puts it away all day. And she loves it. And I've seen a lot of her peers that don't. And I think it's been amazing to know that and then actually sort of allow that to happen for the next generation.

**Dr. Katz:** I have five children. And I've been through this with all of them. And I've been through it innumerable times with my patients, James. So, again, we completely agree. It's very, very powerful.

One of the most powerful determinates of dietary preferences is familiarity. But you know what people tend to think is, "Well, the foods I'm familiar with just are what they are." But that's not true. You can change them. You can get familiar with more nutritious foods. You can rehabilitate your taste buds. And if you shift the foods with less added sugar, less added salt, less added chemicals, you're exactly right. You not only learn to prefer those foods, but you can actually develop aversions to what you used to eat and drink.

And I'm with you. I haven't had a soda now in thirty-five years. As a kid, I didn't know any better. I had them. And they were a part of my life. I realized very early what they were about, that this was sort of a chemistry experiment in a cup. And I wasn't interested. And then after I gave them up, for some stretch of months and went back to taste them again, they're just sickeningly sweet.

And it's nothing you would want to drink when you're actually thirsty.

So the notion that a soda's a good thing, that is the cultivated taste. I mean when I'm thirsty, water tends to satisfy beautifully. And we've just corrupted our palate so we don't even appreciate the beautiful simplicity of water. But you absolutely can get back there. And then, yeah, you have absolutely no interest in the soda. It's not pleasant.

**James:** Exactly. Well, I do want to get into those next four issues. But I just want to cover a couple of other things here on food. Because part of what we see out there is that there's, like you said, there's people that are trying to find the absolute optimal diet and create new substitute meats or new supplements and so forth that are going to sort of replace food altogether. I would imagine from what you said already that you're not a big fan of fat concept.

**Dr. Katz:** No. No. I'm not. On the other hand, I also am a pragmatist. And so we can't make perfect the enemy of good. I think the real solution here is getting to the wholesome foods. But what I am in favor of is doing what it takes to get there from here. And, frankly, for some people the convenience and the engineered satiating properties of meal replacements can be extremely helpful. I think we can devise snacks and food products that can fill gaps in people's days and potentially provide nutrients that raise the quality of their diets. So, again, I think ultimately we would like to be there with real food direct from nature. But, at present, that's out of reach for an awful lot of people. And I think we have to fix that.

The other thing we need to do, we can't just talk about improving food choices. We have to help people

get there from here. And so I think one of the problems with some of my colleagues is they sort of act like the foodie elite. And I've jokingly compared them to Marie Antoinette. In the French Revolution supposedly when the peasants didn't have bread, Marie Antoinette said, "Let them eat cake." Well, you can sort of compare that to the modern day foodie elite where we could say, "The peasants don't have broccoli." And the response is, "Well, let them eat kale." You know, that doesn't really help anybody.

So what we need to do is sort of go where the people are. We have a nutrition guidance system we developed called NuVal. One to a hundred, the higher the number, the more nutritious the food. It's been validated against health outcomes. The higher the NuVal scores of your food, the lower your risk of premature death from any cause, the lower your risk of chronic disease. It's very powerful.

But the idea here is people in the real world do eat food that comes in bags, boxes, bottles, jars, and cans. Frankly, so do I. Breakfast cereal and breads and such, pasta sauces and salad dressings. And the choices you make there can add up to matter enormously to the quality of your diet and your health.

So I think we can help people by engineering our way towards the solution we really want, which is all the right kinds of foods. But to get from here to there, I think at times meal replacements can be helpful. I think at times conveniently packaged foods that are nutrient dense can be helpful. And I think the guidance system to help people trade up their chips, their crackers, their breakfast cereals, their pasta sauces, their yogurts, I think that can be really helpful, as well.

So, again, I'm a public health pragmatist. I can envision the ideal.

But I'm not inclined to make perfect the enemy of good. I want to do good in the real world.

**James:** Absolutely. So one more thing while we're on nutrients before we get on to the other four areas. I know with nutrients, the first time I heard you speak at Yale in 2008, you spoke about CoQ10 and sort of the depletion of statin drugs as a depletor of nutrients. Is this a serious issue in your estimation?

**Dr. Katz:** Well, it is. And certainly that's a very well-established association. There are others. It's hard to tell whether the reduction of CoQ10 levels seen with statin use are affecting people's health adversely, in general. One of the issues we've seen with statin use is that in women, in particular, there's an increased risk of diabetes. I don't think we know for sure exactly what the mechanism is yet. And does that have something to do with the depletion of enzymes or co-factors or nutrients such as CoQ10?

CoQ10 is a really important compound. It functions in the mitochondria, which are the engines of the cell. I mean that's really where we produce our energy. So it's just a critical element in cell biology. And what CoQ10 does there is facilitate the transport of electrons. That's just the key step in how cells make their energy and run the body. So you certainly don't want to run out of CoQ10. And it's very well-established that statin use depletes CoQ10.

In some cases, in my experience, James, the muscle pain that can occur with statin use goes away when you supplement CoQ10. So sometimes the answer is, "Well, you really do need the drug. And it is affecting a nutrient level in your body. And the right responses to supplement the nutrition." So it's an important issue. This is one specific

example. There are others.

The bigger issue, I think, is that again if we look from altitude, we have a culture that needs a lot of drugs. I mean, we have a lot of high cholesterol and high blood pressure and coronary disease and diabetes. And once you have all that stuff, well then, frankly, you really do need drugs. And I'm an internist. I prescribe medication. But very often, those drugs keep people alive. It's quite clear, for example, that when you look at overall statin use in appropriate patients, statins are associated with a reduction in all-cause mortality. They are saving lives.

So then you say, "Okay, well there are these adverse effects of the drugs. But once you need the drug, you're better off taking it because taking the drug is better for you than not taking it. The real problem then is that so many of us need the drugs in the first place. And if we use lifestyle as medicine, we wouldn't. So the better way is not, "Hey, I need a drug. But I'm not going to take it because I don't like them." No, that's a mistake.

You know that the rate of stroke in the United States has come down dramatically in recent decades, James. And the reason for that is not because we're taking much better care of ourselves. The reason for that is better detection and treatment of hypertension, the use of really good drugs. But, again, if we did take better care of ourselves, we wouldn't need the drugs. And then you don't have to worry about side effects or nutrient depletion.

So for now, I would say, if you've got diabetes, hypertension, heart disease—any of these things—be open-minded about medication use. Work with your doctor. Discuss with your doctor. Ask about nutrients. Nutrient depletion. Should you take a

supplement? And I customize those recommendations for my patients. There's no one size fits all correct answer.

But as a culture, what we could say is, "If I don't yet have those conditions, how can we make better use as lifestyle as medicine so I'm less likely ever to need medication, so my kids are less likely ever to need medication?" I'm fifty-one years old. I've got five kids and a desk job. And I'm right in the age group of my patients who are routinely being prescribed lots of medications. I take none. My blood pressure's perfect. My lipids are perfect.

There's just nothing on the horizon to suggest I'm going to need any of the medications I prescribe all the time. And, again, not because I'm a better person. But because I'm an expert in healthful living, I apply that to myself as medicine. And these are the rewards of it.

**James:** Absolutely. Well, again, one other thing. The last word I would just say on forks. You had that as one of the strategies. If you're eating food that doesn't require a fork, that is probably not the right food, right? Like something that's housed in a couple of buns or something like that?

**Dr. Katz:** Well, it depends. Again, you can put some pretty wholesome stuff on a whole grain. I'm not opposed to grains. I'm not gluten intolerant. And so I'm fine with whole grain wheat. We eat a variety of grains in my house. My wife does wonderful things with bulgur wheat, which is a mainstay in many of the Mediterranean diets. We eat quinoa routinely. We actually, occasionally, have amaranth. We have wild rice, just a wide variety. You know, they're rich in a variety of nutrients, fiber. So I like them. And honestly, I like bread. My wife is French. I mean, give me a

great whole grain bread and a good bit of goat cheese and a great red wine. That's a great treat.

Now, I wouldn't eat that for health every day. But I'm not going to take it off my menu entirely either because we were just discussing a little bit ago, pleasure is important, too. And that can be a very pleasurable thing. So I think there's a balance to be struck.

But yes, in general, what we can say about the best foods is that they've got a very short ingredient list. And the best foods of all have an ingredient list of just one word.

You know, the ingredient in broccoli is broccoli. And walnuts are walnuts. And salmon is salmon. And bananas are bananas. You know, that's sort of what we're aiming for. And then they tend to come in less-involved packaging. A lot of the best foods, they just come to you right from nature. The packaging is a peel as opposed to a box.

But you can get some pretty good stuff in a box or a bag, as well. And, again, I think there's a balance to be struck.

**James:** Yeah. Cool. All right. Well, I think that's a great last word on food because this is such a big controversy. And it will continue to be like that. But I think it's just important to just get really clear where the leverage is. And I think you've been very clear on that.

So let's go on to the next one. You said fingers. Do you want to just sort of take us through from matters of public health or public health state of how important the fingers are when it comes to longevity?

**Dr. Katz:** So we're referring there to holding cigarettes. It's tobacco. Since 1993, we've had a literature telling us what the root causes of

premature death are. So we used to think that the leading causes of death were the diseases that show up on death certificates: heart disease, cancer, stroke, respiratory diseases, diabetes, and so on.

But in 1993, there was a publication called "Actual Causes of Death in the United States" that looked beyond that to the factors that cause those diseases that in turn cause the premature deaths. And in that paper, actual causes of death in the United States published in JAMA in 1993, the number one leading cause of death in the U.S. was tobacco. And it still probably is.

But the gap between tobacco as number one and the combination of bad use of feet and forks—not being active enough and eating badly—have narrowed quite a bit. And it may very well be that bad use of feet and forks is now number one for two reasons. One good. One bad. The good reason is we smoke a lot less than we used to. And the bad is we haven't made the progress we need with regard to physical activity and diet.

But it's really that simple. If you are exposed at fairly high levels in your population to tobacco, it quickly becomes the leading cause of premature death. And that's not really the worst of it. I mean, you know dying prematurely is bad enough. But people who die from conditions induced by tobacco don't die quickly for the most part. They die slowly.

It's a miserable death, things like emphysema and lung cancer and COPD. They're really, really unpleasant. And before they take years from your life, they take life out of your years. So I don't think we can overstate the significance of tobacco as a scourge in the world. I would like to see it banished to the dustbin of history. You know, it's proves to have been a humongous

mistake. And it needs to go away. That's all there is to it.

Unlike food, which is complicated. You know, food can do us harm, of course, when we make bad choices. But it's critical to life. We can't reject it. We have to make it work for us. We can reject tobacco completely. It's was a huge boondoggle. It's just a historical tragedy. It needs to go away. I love the movie Avatar, James Cameron's Avatar. But the one thing I didn't like in the movie because it's this presumably distant future we're in was that one of the scientists in the movie smokes. And I thought, "I don't even believe that would be possible to go that far into the future and still have that stuff around." I think it will be long gone by then.

**James:** Yeah. No, I think you might be right. All right, so let's look at the other three areas. Because those three that you've just mentioned are typically sort of Public Health 101, right? And now, we're getting into some maybe other areas that you mentioned earlier, the stress and love and other things like that. Do you want to just talk on why this has become part of your sort of recommendation's list now?

**Dr. Katz:** The evidence is really very strong about sleep. That it has profound influences on health, including those aspects of health that tend to be the modern preoccupation.

So, for example, weight control. Sleep deprivation is commonly a factor in difficulty with weight control, both because it's hard to eat in a thoughtful, restrained way when you're tired and cranky. But also because when your sleep pattern is disrupted, it disrupts hormonal balance, which, in turn, directly conspires against weight control and helps put calories right where you don't want them to go—around your middle—where they

do the most harm and that sort of thing.

And there's a pretty comparable body of information regarding stress, both as a factor in adverse health outcomes and as a factor that conspires against weight because then you wind up eating to relieve the stress. And sort of food becomes the medicine and so forth.

But also evidence that other things being equal, stress can increase the likelihood of and the progression of heart disease, cancer, diabetes. People who are overwhelmed by stress don't recover from chronic disease when they get it. The evidence is really very strong.

And then, finally, it's equally strong for what can be summarized as love. And what that really refers to—it's not specifically romantic love, although, that's a wonderful thing— but just strong emotional connections. John Donne told us centuries ago, "No man is an island." It's still true. We are social creatures. Men, women, and children alike, we need one another. And if you're isolated and lonely, it conspires against your health. You're less resilient. When you need help, of course, there are the people to provide it. But there just isn't that emotional support that needs to be part of our existence every day. We just don't thrive in isolation. We thrive as part of a tribe. So the evidence is strong for all of these.

And from my perspective, and certainly, writing *Disease-Proof*, the issue was we need to look at health holistically. It's either intact or it's not. And the interesting thing is that any one of these can conspire against the other. So imagine you're just lonely. Well, then the motivation to exercise or eat well starts to go away. And so you don't do those. And then you gain weight. And you start to get unhealthy. And

then because you're unhealthy, it's hard to get out and do anything. So you become more isolated and more lonely. And you start to go down the tubes.

If your problem is sleep, you're just exhausted all the time. So you don't have the energy or the motivation to eat well or exercise. So you don't do those. And you start to gain weight. And then because you've gained weight, you have sleep apnea. So you sleep less and become more exhausted and crankier and eat more poorly and exercise even less. And down the tubes you go.

The other thing that we could add to this mix is chronic pain. Very common problem because one of the chronic diseases that plagues modern society is arthritis. So you may have joint pain, which makes it hard to exercise. Which makes you gain weight. Which then, may interfere with your sleep. So now, you're exhausted. Making it even harder to exercise. So you gain more weight. So your arthritis gets worse. And on and on it goes.

So the only way to fix all of these things really is to look at all of them together and think holistically. We have a whole section in *Disease-Proof* on sizing yourself up holistically. And then you can reverse engineer this.

So, for example, pick a typical patient in my practice who's maybe in their sixties, has obesity and maybe type II diabetes, but, certainly, insulin resistance. And their lipids are abnormal. And their blood pressure's high. And they have arthritis and in chronic pain. And they don't sleep well. And they don't eat well. And they don't exercise. And when you talk about any one of these things, you get any of the others as an excuse. "I'm too tired. I'm too lonely. I'm in pain." And on and on it goes.

Well, what we try to do is say, "Okay. Let's look at all of them. And put them in a sequence and figure out which one of these do we need to focus on first. Maybe it's sleep. Maybe it's pain. Let's try treating that. And then as soon as we get a little bit of benefit out of that treatment, we either improve your sleep by doing the right thing or we improve your pain by treating it effectively, our agreement then is we'll take what we gain and invest it back in you. And work on the next thing. So if we improve your sleep, we'll then work on your pain. And we'll then work on exercise. If we improve your pain, we'll then work on your sleep and then work on exercise and then move on to diet."

And so what was kind of this degenerating spiral down the tubes can become the very opposite. It can become a spiral staircase ascending step-by-step up to the health and vitality that everybody wants. And everybody deserves.

And that's the benefit, James, I think, of recognizing that it's not just about diet. And it's not just about physical activity. It is about feet, forks, fingers, sleep, stress, and love.

It's about our relationships. It is about whether or not we have pain in our lives that's interfering with exercise. You have to look at the whole picture.

And, again, the science is very strong on each one of these independently. But, I think, an equally important message is we've got to connect the dots because we really can reverse engineer these processes that otherwise conspire against our health and vitality.

**James:** Yeah. And it seems like in a holistic paradigm, just improvement in any one of these sort of sends you moving more upwards in sort of like an upwards spiral versus any one of them if there is a negative impact, as

you said, it starts a negative spiral. So it's really about just trying to find one of them to kick-start you in an upward direction. And then you see the progress in all of them, probably, right?

**Dr. Katz:** All the time. It's a very, very powerful process and extremely gratifying for doctor and patient alike. So in my clinic, I'm directly involved in this. But I also think people can do this on their own just by getting the right perspective. And so, that the point of this whole section in *Disease-Proof* was to empower people to address this on their own. You know, whether or not there's a doctor involved, look at yourself holistically, kind of get a handle on, "What is it that makes it so hard for me to eat well? Can I focus right away on diet? Or are there other things I need to think about first?"

Frankly, if you've got a toxic relationship, a marriage that's dysfunctional or if you hate your job, that may be the thing that needs attention first. So, again, looking at the big picture really, really important. And those key elements in the big picture often are feet, fork, fingers, sleep, stress, and love.

But again, it has to be customized. And we need to be honest with ourselves. Identify the priorities in our lives. And then remember that making your life good is what this is really all about. And so relationships and job and career and all of those things figure in it. That's part of health, too.

**James:** So which people in medicine because this whole conference is on the evolution of medicine? And what we're really interested in is seeing the way that medicine is evolving. Who in medicine or who outside of medicine is in the best position to kick start this upward spiral?

**Dr. Katz:** Well, again, what we've been talking about for most of this hour, James, is lifestyle as medicine. I'm the president now of the American College of Lifestyle Medicine. That's really where my passion resides. And what means is if lifestyle is the medicine, then the doctor is you. And so, frankly, every one of us. And we were agreeing before if you want to change the world, it starts by changing ourselves.

Because when enough of us buy better food, then the food supply improves, that sort of thing.

I think that's true of medicine, as well. If we want to be treated holistically as patients, I think we need to start looking at ourselves holistically and acknowledging that our relationships matter and that whether or not you're satisfied with your work and your career is important and cultivating love and friendship in your life is important and prioritizing sleep. I think it can begin with every one of us.

I think there is a revolution in medicine. I think medicine should be more holistic, more integrative, emphasize lifestyle, should be more about cultivating health than just treating disease. And we could talk about different specialists who could have a hand in that. Maybe it's the pediatricians because they're taking care of kids. Maybe it's the cardiologist or the endocrinologist. I don't really see it that way.

I think, again, the best medicine is lifestyle. And the spoon for that kind of medicine isn't so much the clinic is culture and each of us is the patient. But each of us can be the doctor, as well. We can administer this to ourselves.

So I think it's simply a matter of opening up our eyes, recognizing that we have substantial control over our medical destinies, committing to

be responsible, sensible to acquire skills. That there isn't magical pixie dust. We need to think about health a little bit more like wealth. You know, something that you invest in, nurture, cultivate, share with the people you love, bequeath to your children. You raise children who aspire to it. I mean we could have all of that if we just change the way we think. And then change the way we act. So I see that the best and brightest future in medicine, pertaining to how we function as patients, frankly.

**James:** And is that one of the reasons why you still take such good care of yourself? Because I definitely see that people don't really like to be told what to do. But they do sort of look to models or examples of people that have done it and look to copy them. But everyone has an opinion, even if you're the head of public health. People just don't generally like to be told what to do. So it seems like the knock on effect of actually doing this in your community and doing it for yourself. And letting everyone else in your community see that you've taken this responsibility rather than sort of preaching is going to be a better strategy for taking this message outwards?

**Dr. Katz:** I think so. I don't like being told what to do. But I don't mind being told what's what. Knowledge is power. I like to have the truth. So much of my focus is simply telling people what's what.

But, yeah, I think, frankly the issue here is one of empowerment. And I also think, we want to take the moral overtones out of the discussion. One of the problems with discussions about health is it feels like I'm being told what to do. You know, someone's wagging their finger at me and telling me, "Lose weight. Lower your cholesterol." And that's why I routinely discuss with my patients what health is for.

They come to me.

We're talking about these things. And I say, "By the way, what is this all for?" "Well, I want to be healthy. I don't want to be..." "But why?"

Well, the answer to all of that is to have a better life. So this isn't for me. It's not because you should. It's because healthy people have more fun. And who could object to that. And after that, when you agree on that, then it's not about being told what to do.

It's just, "Yes. I want that. Now, let's talk about how best to get there from here."

**James:** Absolutely. And I think one of the things why I'm really excited about the functional medicine model is that it allows to have more time at the beginning of the conversation to be able to find out "why" for the patient that's sitting in front of you. Everyone has a different "why." For some people, if they're older, they want to be able to play with their grandkids. For some people, it's exactly what you're saying, to have a better life. But it seems like uncovering that "why" on a case-by-case basis is an important role in medicine.

**Dr. Katz:** I couldn't agree more. And, again, James, I think it's a role the doctor can participate in. But it's also something we each, basically, do for ourselves. You know, "What is it I want in my life?" But whatever the answer is, whether it's time with your grandkids or you love to golf or you love to ski or whatever, you're going to be able to do more of it and do it for longer if you're healthy than if you're sick. It's just that simple. So I think, all of us would prefer to be healthy than sick.

What we get out of being healthy is very individualized. But the prize for each of us is having more of the life we want to have. And, again, it's out

there for us. There's just this huge opportunity. Eighty percent of all chronic disease could go away if we turned what we have long known into what we routinely do. And until that day dawns, I'm going to keep doing what I do because I really would like to see it happen.

**James:** Absolutely. And one other area that's just where medicine is evolving is this move from sort of analog to digital. And we could definitely be looking at a time in the very near future where everyone has an iWatch. And the iWatch is keeping track of a hundred different health numbers. And patients are getting this information in various forms, through different apps.

What do you think is the promise or the potential of that digital revolution for getting that information, for empowerment in these areas?

**Dr. Katz:** Well, again, I think we've engineered our way into this mess with highly processed food and labor-saving technology. I think to some extent, we have to engineer our way out.

And we have evidence that some of the very things that are a part of the problem like video games that encourage kids to be sedentary can be converted into part of the solution because we make them invite physical activity. Similarly, a lot of the things that modern living invites people to neglect like moving their feet, technology reminds them not to neglect, like counting their steps and tracking their activity and so forth.

At the end of the day, again, you look at blue zones and places where people just live well. They tend not to be highly technology dependent. But to some extent, the horse has left the barn. We are in a highly technologized world. And now it can either be part of the problem or

part of the solution. So I think it can be a significant part of the solution. And I think it will be.

**James:** Excellent! I appreciate you sharing that. So you're probably more qualified than almost anyone on this summit to talk about this evolution of medicine from a public health point of view. I really appreciate all the things that you've shared today.

Is there anything else that you'd like to share? When you really think about the evolution of medicine and sort of your role in it as it has been and your role moving forward, is there something about the evolution of medicine, particularly, that you'd like to share?

**Dr. Katz:** Well, I suppose the final comment here, James, is we don't really have a choice. We need a revolution. Right now in the United States, the Centers for Disease Control is projecting that should current trends persist, by about the middle of the century, one in three American adults will be diabetic. That's over a hundred million people.

We're having trouble paying the bills right now. And they are only twenty-seven million diagnosed diabetics in the U.S. A hundred million is just not sustainable. I don't think the country can be solvent. So whatever the mission we're involved in related to health, frankly we find ourselves on the front lines of nothing less than homeland security. So, unless, we have this revolution in medicine where lifestyle becomes the medicine, where it's more about prevention and less about treatment, we are going to bequeath to our children an absolutely unsustainable burden.

So, yes, there are elements of evolution that we clearly need in medicine. But, frankly, we need a

revolution. And we need it pretty darned soon. And the good news is we have all the knowledge we need. We should have all the passion we need because this is affecting people we love. This is not a job where we need new Nobel Prizes to figure out how to get it done. We know how to do it. We just have lacked the resolve to get it done, to make culture the medium and lifestyle the medicine to get the job done.

We really aren't going to have much choice. It's a bit like climate change. We've sort of reached a point where the consequences of failing to act are simply too great. And it's unfortunate to have to get pushed up against the wall before you take action. But when you are pushed up against the wall, you're out of choices. We're kind of out of choices. So I think whether we call it evolution or it's a bit more abrupt than that and it's revolution, I think this basic change in the character of medicine is inevitable because I don't think we have options. I think we have to do this. And the good news is we will all be beneficiaries of it.

**James:** Absolutely. And the way that you see these things going down generations, it's not just doing it to ourselves. But you have five kids. I have kids, too. And I think if you look at it from that point of view, there's definitely something that needs to be paid.

And the last thing I would say is there's a great quote that I saw yesterday is, "May you never know what you prevented." I think part of this is that it's a lot easier to be reactive to something that's obviously a big problem, like you have a disease. With preventive medicine, we really have to put that to the forefront so that everyone can see the value in it. And I think you've shared that so eloquently today.

This has been The Evolution of Medicine. Dr. David Katz, I really appreciate you taking time to be on the summit. I really appreciate all the work that you're doing through the different organizations that you work with and also through the internet to get this word out there. It's been absolutely fantastic to have you here on the summit. And I hope that the ripple effects of this summit go some way towards what you've been espousing today.

And we look forward to continuing to watch your career. And who knows where it might take you as far as being able to pull the lead as being able to make some of this change. But it's been great to have you here today. And we'll look forward to hopefully communicating more in the future.

**Dr. Katz:** Thank you very much, as well. It's been my pleasure. And I appreciate the help in getting the word out. So my thanks to you.

**James:** All right. Thank you!

So this has been The Evolution of Medicine Summit. Lots of great other speakers today and all the way through the week. This has been Dr. David Katz. And we'll see you next time!



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