Transcript of “Surviving Mold with Dr. Ritchie Shoemaker”

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Dave: Everyone, it's Dave Asprey with Bulletproof Executive Radio. Today's Cool Fact of the Day is that vinegar can kill tuberculosis and mycobacteria even better than bleach. Researchers found that the active ingredient in vinegar, which is called acetic acid, out-performs chlorine bleach, which itself can be toxic. Using a supermarket grade, 6% solution for 30 minutes wiped out even the most drug-resistant mycobacterium, tuberculosis, which means maybe vinegar is useful for something besides tasting good.

Today's guest on the show is someone I'm fortunate to be talking with. It's Dr. Ritchie Shoemaker. Ritchie Shoemaker changed my life because he wrote a book called Mold Warriors a while back. If you've been listening for a while, you know I had Lyme Disease and you know I've been exposed to toxic molds and, you know, I'm a bit of a canary.

It was Dr. Shoemaker's explanation of complex inflammatory pathways in the gut, along with some treatment modalities that led me, in part, to recover a lot of my health. The knowledge that Dr. Shoemaker has put together, if you're working with biotoxin illnesses, throughout his career is impressive and almost shocking when you hear about all the work he's done.

Dr. Shoemaker, your most recent book is Surviving Molds. It's also a profoundly good book, even for those who are not sick with mold today, just about how to build a house that's appropriate. Thank you for coming on the show. It is an honor to have you.

Dr. Shoemaker: Thank you for your kind words. It's a pleasure to see you on Skype, and I've heard of you and this is going to be fun. We've got a lot of good energy to share today.

Dave: I think so. You've written several books on mold and tell me about Surviving Mold, the most recent one. What motivated you to write it?

Dr. Shoemaker: I had so much that I had learned since I published Mold Warriors in 2005 and there were so many pieces to the puzzle that were left out that it was pretty clear that it was time to try to put some time into expanding careful attention to detail on remediation and looking more carefully at how, in my mind, the US agencies have kind of let us down as far as proper evaluation of sick people inside water-damaged buildings and it was time to really say what the status of treatment was.

In 2010 when I published Surviving Mold, we were just getting started with a paper on use, for example, of vasoactive intestinal polypeptide, or VIP, and since that book was published, we now have 18 months follow-up on our VIP cohort. We picked the worst folks, quite frankly, Dave. As well as you're doing, you wouldn't have qualified for the study. Maybe when you were initially ill you would have, but nonetheless, with VIP we had two questions: Does the drug work long-term and is it safe long-term. I guess that's four questions. The answer to all those questions was, yes, it does, and we're able to show rather phenomenal safety and we found some problems with VIP that you can't use it for this and you can't use it for that if you have pre-existing conditions of different kinds.

If you've met all the criteria, VIP truly was just what the doctor ordered. When Surviving Mold came out, it was like, this looks pretty good and now where we are is, jeez, how can we let people walk around without regulation of inflammation from things like VIP. We're using VIP in some hands with docs that are not retired, quite frankly, to overcome some additional obstacles and we're looking at those to create races of supermen, in the sense that ...

Dave: (laughs)

Dr. Shoemaker: No. No kidding. You can improve exercise tolerance, you can improve cognition. It is genomically active and Dave, boy, that's another talk for another day. The real issue is that we can look at fingerprints of what inflammation is doing, not just in your brain, we talked about before the show, but also in human gene expression.

Mold Warriors was a good start, I thought. My mom liked it, my grandmother liked it and all that, but Surviving Mold, my wife just says, "Look, do not write another 500-page book," and I said, "Okay, I didn't. It's 800 pages." Mold in Peace is what we call that one. The next book is getting ready to come out maybe this coming year and it's going to be looking back as now that I've looked death in the face with my own illnesses from mold, and that, fortunately, has left me alone for a bit, where do we go from here? Where we go from here is inside the human genome.

Dave: Yes. What percentage of people are particularly sensitive to mold, in your experience as a 30-year practicing physician focusing on mold and other environmental illness?

Dr. Shoemaker: We have collected statistics on over 10,000 cases and 2,000 controls and we've looked at the genetic makeup that these folks have. The immune response genes are HLADR, a series of [varies 00:05:35] on Chromosome 6 that are understudied but remarkable in what they're doing as far as taking a foreign particle, an antigen, and processing it so that our immune response can make an antibody to it.

In this group of HLADR we see consistently 24, 25% of people can not make adequate antibody responses, and they're the ones that comprise over 95% of people who have an illness from water-damaged buildings. You're going to say, "Well, jeez, 95 is not 100." Biology is not 100%. You can get sick without HLA susceptibility, but genetics is huge. Here you are, a young man, I'm going to be saying to you, "We know that you're better, but you were ill. What's your HLA and then what's the HLA of your kids?"

Dave: In my experience, being the one in four who gets completely whacked upside the head by a moldy environment, one you don't know you're in, the first time, especially, all of a sudden life falls apart. I remember going to the doctor and saying, "I feel like I've been poisoned. Nothing works. I'm wrecked." The other people, though, they go into these moldy environments, they mount an immune response but it comes at biological cost and it comes out of their cognitive function first and then maybe they just get a cold. They get a response that isn't free. None of us are healthier from being in moldy environments. Some of us are more resilient than others, but by removing this from our environment, you free up resources to do something else useful with life. That's part of the whole Bulletproof thing.

Dr. Shoemaker: That's absolutely important information. When people have some so-called minor symptoms with acute exposure that resolve with removal, we might say, "Well, you had an allergy, or you had this or that." Basically what you had was, your idea of being bulletproof, is that you were shot and hit. Granted, you were hit in some sort of Kevlar vest, so you're only knocked down on the ground, you got up and you're not dead.

Dave: Right. That's perfectly said. That's the right image there. When I work with people who don't have those genes, or at least don't appear to, because they can go into places that would really give me a full, my forehead swells up and I feel like crap when I go in there and I go through a detox protocol, they still don't do as well. "Oh, I've got a headache and I've got a sore throat, but I'm fine the next week," and they're back in the saddle without taking activated charcoal or anything else.

We're talking about breathing mold and damaged buildings and genetics. One in four people are at serious risk and the rest of us have various degrees of performance decline that happens in the presence of this. What about food molds?

Dr. Shoemaker: In litigation, one of the common ploys of defense interest trying to say the apartment that was not taken care of properly and the

mold on the shoes and the mold in the kitchen and the mold in the closet, "Well, that's not the problem. Yes, there was an illness but it was all from eating mold." You had an esteemed group of practitioners, set up their own college, its not a board, the American College of Occupational Environmental Medicine, said, "No, mycotoxins need to come to a certain level to make people sick," and we all snicker, snicker, snicker, saying, "What a bunch of garbage that is." Then they say, "Because you never get that level, the illness comes from ingestion."

That became one of the ploys that I had to refute as an expert in mold litigation. Unfortunately, there's a tremendous amount of really exciting information still coming out. The USDA is looking fairly hard at mycotoxins in animal feeds.

Dave: Yes.

Dr. Shoemaker: Sure. If it's an agency, there's going to be a cover-up. Oh, I didn't say that. Specifically, if there's an agency opinion, it's possible that there is an unspoken agenda is what this really means. How much pork makes you sick? We should do that, but then also along the same way, what can we measure within 15 minutes? The classic example of hyperacute changes comes with measuring Transforming Growth Factor Beta-1, TGF Beta-1, one of my favorites. Oh, what an important compound.

When we want to see if a guy's going to tolerate VIP or not, we'll measure his labs at baseline, give him a single dose of VIP and then track symptom changes, which usually will occur, at five and ten minutes, and repeat the blood analysis in 15 minutes. If TGF Beta-1 goes up, guess what? That person's coming from a moldy environment. They're going to say, "Oh, no, couldn't be, couldn't be," but it certainly is.

If we take your pork experiments and add to that one that has been shown to work, I think it would be doable even before the Genomex comes out on the market. It's worth thinking about.

Dave: I would pay for my own studies for that sort of thing, to have that done, just to sort of show it's N=1, but the whole point behind quantified self and citizen science is that N=1 is pretty damn valid if you're that one, and that it probably is useful information for others and they can do their own N=1 and at a certain point we have enough data.

There is, for instance, in the pork case there's epidemiological data from different countries, a lot of eastern Europe, around the level of this toxin in pork and the incidence of, particularly, kidney and bladder problems. We understand some weird things about how that toxin smooths out the inner wall of the mitochondria, so you get mitochondrial damage from mold, which is separate from the VIP to leptin to insulin resistance pathway that builds up.

Honestly, I think that's one of the reasons I weighed 300 pounds, was because I was living in a house that had mold in it. It's a fascinating environment to look at because this is all sort of hidden. Number one, you don't know you're in a moldy environment unless you've become sensitized like I certainly have been and a lot of your patients have been, and if you're having symptoms that happen a day or a week later.

For me, the weight feels, and in fact, I'd love to get the medical explanation of this. I was on a dinner cruise in San Diego and the ship smelled like a mop. I knew it had mold in it, but I wanted to spend some time with the people there. I said, "All right, I'm going to take a hit," and I forgot my glutathione and my charcoal, because I do well when I take those if I'm exposed to mold. I just didn't have them with me on the trip.

I came out of there the next day, four times I forgot a word. What was I going to say? I don't ever drop words. My brain works all the time, and I noted that because it was weird. The day after that I started getting really tired and my GI stopped working. All sorts of bad problems that I'm not used to ever having anymore. The day after that I started getting skin lesions, like deep pimples and things like that, getting canker sores in my mouth. Then I needed

to sleep 12 hours and I just felt like garbage until I took cholestryamine and activated charcoal and lots of calcium D-glucarate and lots of other things.

I know my response curve. First it's brain, then it's gut, then it's skin and when I grew love handles the next day. In fact I posted a picture. I grew breasts, literally, I had swelling in my breasts. You could see my nipples in pictures that looked weird. What's going on from an inflammation perspective? Given, I'm an acute example but subtle levels of this happen in other people as well. What's the etiology of that?

Dr. Shoemaker: One of the really important issues is change in cell membrane permeability. We know that with NeuroQuant, which is done in California not too far north of San Diego, that we can look at changes in some structures of the brain where they develop microscopic interstitial edema, a long way of saying that you can't see this swelling of a brain area with an MRI, which is macroscopic, so this is microscopic, but the swelling is between the cells.

You have increasing leakiness of the blood-brain barrier, fluid and plasma particulates will move into particular areas so you can sum as a whole enlargement of a, say, forebrain parenchyma or cortical gray, something like that, in the part of the brain. That's happening on a microscopic basis. The changes, hyperacutely and brain, clearly are due to blood-brain barrier permeability changes, VEGF, MMP9, TGF Beta-1, really good literature to support that.

That's one reason that we've measured those and it's kind of interesting that we also know that TGF Beta-1 induces production of compounds that block correction of brain damage after the fact. If you have traumatic brain injury, if you've got concussions and all this stuff, you start making up some stuff called glial fibrillary acidic protein, the name doesn't matter, but specifically, that stops the reassessment of interaction of these fibers called Purkingy Fibers in the brain. So not only is there an acute injury, but that acute injury is multiplied by a genomic change.

In the gut, much quicker. I thought that you were going to say that your gut was coming before your brain.

Dave: I feel it in the gut first, but I don't get bad gas and diarrhea and all that. I just feel, my stomach's like, "You ate something bad," like, "I know," but there isn't any external sign.

Dr. Shoemaker: Some of the best work done in so-called leaky gut has come out of the celiac groups that look at tight junctions, the same tight junctions that are [inaudible 00:15:46] in blood-brain barrier are paralleled by analogous but not exactly the same structures in the gut, and those are loosened rapidly, especially if you're low in Melanocyte Stimulating Hormone, or MSH, so that if you're MSH is cooked, and most folks that I see are, specifically, your predisposition to develop hyperacute changes in GI is multiplied.

Added to that is the tremendous increase in bile salt production hyperacutely. This is one of the things that we see as bile flow is slowed by an inflammatory response, the bile salt production gets up-regulated in an attempt to move bile along. That doesn't work and you get sludging of bile and then a reflux of bile back into the stomach and get lots of misdiagnoses, what's wrong with abdominal pain and bloating and belching. Specifically, as those bile salts move down further in the gut, they can add synergistically to loosening of some of these tight junctions in jejunum and ilium. It's not just one element.

You mentioned the pigs, and I want to go back to the confounders. You know full well that I'm only building, you've got bacteria, you've got Actinomyces, you've got all this stuff. Show me a good animal factory, like a hog factory or a pig factory, that doesn't have some kind of lagoon around full of particular kind of nutrients and guess what grows there? Cyanobacteria. Huge problem in North Carolina, where pigs and chickens both are, these are problems, is many of these lagoons are full of Cylindro-spermopsis and Microcystis and that adds to the inhalation of pigs and hogs of what's growing out in the lagoon.

Dave: Now, people who aren't familiar with your work, most of the people listening to this probably aren't, should know that you got started being an amazing medical detective, looking at what happens with these toxic blooms of algae and how they create chronic neurotoxins that survive and can enter the water supply and have killed people by causing this sort of inflammation. This is how you got down the chronic neurotoxin, down the biotoxin path. You're saying that that original work now is illuminating what's happening at industrial animal farms where they're allowing this to happen and it is airborne. Correct?

Dr. Shoemaker: Yes, indeed. The particular Cyanobacteria toxins will be volatilized in association with water droplets. They're not evaporating, but they are in the air, you can breathe the air over the body of water, the wind can blow it. Some of the classic examples in Florida in Lake Apopka were people having measurable amount of Microcystin in six-floor condominiums 250 yards away from the shore of the lake. It's like, how did this get here? We had the same problem with a guy in Wisconsin, and you say, "Well, Wisconsin is a hotbed for Microcystis, sure it's 50 degrees below zero there now." Actually, between this guy's apartment in Lake Michigan, he's outside Milwaukee, is this beautiful lagoon full of blue-greens.

Here you are in California with people eating blue-green algae for health benefits out of Klamath Lake. Klamath Lake had a big outbreak of Microcystis. It's like, "Wait a minute, this just doesn't make a lot of sense." As you go forward, I would love, since we can measure microcystin in blood, I would love to give you some summer pork and some spring pork and start to try to measure some of these things in addition to the proteomics.

Dave: That would be fascinating and I'd be happy to be a guinea pig and I know how to get myself back in the saddle within two days even if I eat the world's worst pork, but I'll pay for it.

Dr. Shoemaker: Cool. I thought you could tell me the chicken was also doing things, because one thing ...

Dave: I just don't eat chicken. It's gross and it's full of bad Fusarium from the corn. Chicken is just not a good source of polyunsaturated fats, either, so I just don't think it's on the optimized human diet.

Dr. Shoemaker: It's even worse than what you said.

Dave: Uh-oh.

Dr. Shoemaker: One of the problems with little baby chickens and little baby pigs both is that they suffer from a parasite, not of Bobesia, not Atoxoplasma, but another one of these Apicomplex ends of the Malaria family that's called Eimeria. E-I-M-E-R-I-A, and Eimeria kills little chicks like crazy. Granted, they're only ten cents apiece but, boy, that adds up if you've got 40,000 little chickens times ten cents. What do they do? They put in Monensin and Nigericin, which are polycyclic ether toxins, into chicken feed to make sure that you kill the Eimeria Parasite before it starts growing in the baby chicken.

What these compounds do is that they, in association with receptors that will pick up microtoxins, are phagocytosed or engulfed into antigen-presenting cells and Monensin and Nigericin, same with insulin receptors that are internalized, will prevent release or opening of what's, this endosome, as we call it, this little goody that comes in the antigen-presenting cell that you need to stick an HLA molecule on to recognize, they will prevent that release.

If you are wondering about where your Type II Diabetes came from out of the blue, my question is, did you listen to all those people who said eat more chicken and less beef? Now you're eating Monensin and Nigericin, which will create insulin-resistance because you sequester insulin receptors and insulin inside antigen-presenting cells. The same thing happens with mycotoxins. In fact, Monensin is one of the things that protects against some mycotoxin poisoning if you are eating that at the same time you're eating stockpiled foods.

It's interesting. The rounder you go, the faster you get, you keep on seeing more links. What other compounds are in these food we don't know about? Can you tell me where all the Strontium is coming from in the [Podunk 00:22:18] River? And what were we doing with arsenic, saying that is a growth stimulant? It used to be put in chicken feed all the time and finally it's being taken out. What is the stuff doing getting in the chicken that we eat?

Dave: It is not something that I prefer to put in my body and I decided a long time ago when I go out to eat, if it's not grass-fed, pasture-fed stuff by, usually, small farms, I will eat a vegetarian, soy-free, corn-free, grain-free meal. In other words, I bring my own butter and I put it on top of a whole bunch of steamed vegetables. Maybe if I'm feeling like I want carbs, I'll have some white rice, which has had the outer layer of it polished off where more of the mold toxins form, not to mention the naturally occurring toxins that occur in the outer layer of the brown rice anyway.

It sounds like I'm totally a nut except there's thousands of people who are as picky as I am now because they tried it once and their skin cleared up and they lost weight, they stopped being inflamed, their brain cleared up and they're just dialed in, and then there's a bunch of other people who tried it and they just felt really good all the time instead of feeling highly variable.

I think this a much bigger problem in the food supply than anyone talks about. Am I just being picky here or it sounds like you're kind of on the same path?

Dr. Shoemaker: The issue that I face is that we need data. If your N=1 study is added to another N=1 study, then let's get N=100. There are mechanisms to do that but we really do need to follow the principles of science. It's one thing for you with 101 podcasts now to share what you know, but I'm going to make the pitch that what you know needs to be looked at as carefully as anything else, otherwise you're just going to be some kind of wacko spouting off on the radio.

Instead, if you are a prophet, and I suspect you are, then what we really could do without too much trouble is develop a research design, find some funding, it shouldn't be too expensive, and actually look at this.

Dave: How much funding would something like that cost? I don't know. I've never done anything like that.

Dr. Shoemaker: If we did this right, I would imagine that $25,000 would do a study that will be enough to show evidence that there is a problem. It's not zero, but it's, that's with people donating their time, just paying for labs and supplies and all this. The answer is going to come from genomics. If we had a pile of study that said. "Yes, I show these hyperacute changes in people who have exposures," then we want to look at chronic, low-level exposures, people who eat chicken all the time, people that eat pork all the time, people that think they're getting older and that's why they can't remember where they left their hat yesterday. That's when the genomics will tell us what their fingerprints are.

Out of 25,000 genes, for example, we've got 350 of them fingerprint for mold and I can tell you with one tube of blood whether you're moldy or not. Same thing with the NeuroQuant, we can look at your brain the same way. If we put all of these together, now we've got these interacting disparate, independent variables with one conclusion, that's that food did it.

Dave: I will work on ways of putting something like that together. I think there's probably enough demand to do like a kickstarter or something where we get enough people who are interested to contribute a little bit and do a study. I have zero doubt that this is a problem. I've seen it in pro athletes, people who aren't moldy-sensitive, but they're just off their game. It's smaller changes. I'm on board with it. We'll figure out how to make something like that work.

Dr. Shoemaker: It's called a proof of concept study and as such, it's not going to be double-blind, placebo-controlled, it's not going to be anything

other than one data set from one group that we compare to known controls. We've already got the data on controls. We don't have to reinvent that wheel. That's a hugely important wheel. So much of what I see in [inaudible 00:26:35] written about mold now just does not have any control groups at all and, golly, you can't do anything about conclusions without control groups, but we've already got them.

If you're ideas are solid, and let's assume for a minute they are, then we can show unequivocal, objective parameters and not just that I had trouble finding a word four times on Sunday.

Dave: There's no doubt that science backs this up in my mind, and if it doesn't, then there's something else going on and what I would do there is I'd say. "All right, let's look at the gut. What's the gut biome look like? What are the bacteria that are growing in your stomach and how do those interact?" I've read lots of research about how those break down certain mycotoxins. There may be another set of data we need there, but the effect is there for me and for enough other people that at this point with the amount of specificity from the amount of people I've talked with, I don't think it could be placebo, just because people, they're doing great and then one day they're like, "What the heck just happened?" Then they trace it back to, they did something that obviously would have introduced a mold and they were down for only a half-hour, but still it was a half-hour of fogginess that they weren't used to.

Dr. Shoemaker: One of the things that I'm hoping that you'll do as you consider this is looking at changes in gut bacteria. If we are looking at bacteria and fungi and any number of kinds of compounds that will break down mycotoxins in the gut. People like Jeremy Nicholson, this is BioMC.

Dave: Yeah, uBiome. uBiome, it's one of the genetic studies. I've been working with the uBiome guys. Anyway, didn't mean to interrupt your discussion there.

Dr. Shoemaker: Jeremy Nicholson in the UK has been one of the pioneers looking at what he calls Metabolomics and other people call other things Metabolomics, but specifically, he's looking at metabolites present in urine that do change fairly hyperacutely as well. Maybe some of that $25,000 we can spend on urine specimens and Jeremy can help us out. It would not be surprising if that turned out to be easy, quick and reliable.

Dave: Let's talk for a minute, going back to celiac. One of the things that toxic molds can do is they can cause your immune system to cross-react with gluten and casein, so when you're exposed to the molds you become, especially airborne molds, you become more sensitive to gluten and casein. We know in people with Crohn's Disease that there's a much higher likelihood of them having circulating aflatoxin in their blood. Do you think that there is a correlation between celiac, Crohn's, IBD and mold toxins?

Dr. Shoemaker: If we ask the question a different way and said, "Is there a chronic inflammatory response syndrome that can be applied to food tolerances or not," the answer is yes. The food protein-induced enterocolitis with an FPIEC is clearly shown to be some of the most in food-intolerant people, whether it's corn or soy or casein or lactose, and some of these kids are just wiped out, can't eat much of anything, they're nursing only, if Mama has a Fig Newton, the kid suffers terribly, for example.

Specifically, that is related to an inflammatory process associated with exposure to water-damaged buildings. We have a nice case series along that way. Crohn's is a little different in that it is a chronic inflammatory response syndrome without the same contribution with C4A and MMP9. There we see TGF Beta-1 and then T regulatory cell and TGF Beta-1 imbalances dominating those people. That's a separate issue that we know it's inflammatory, but we can't necessarily blame the initiator as exposure to a water-damaged building. There's two different issues along that way.

I want to just throw out for discussion the three different ways to get gluten problems. One is [inaudible 00:30:43] TTGIGA-positive celiac disease, the second is MSH deficiency. MSH, and there's a nice paper from James Lipton and Anna Catania looking at MSH resident sites in the gut, and it's everywhere. When you don't have MSH, regulation of auto-immunity and auto-immune problems in the gut starts to fail tremendously and you will see loosening of these tight junctions and actually gluten now localizing in the tight junctions where before they didn't.

The third group of people, I haven't figured out and I'd appreciate your comments on this regard, they just can't handle gluten at all. They don't have anti[inaudible 00:31:23] antibodies that the MSH-deficient people will have, they don't have TTG antibodies, but if you give them gluten they go to hell in a hand basket. The real issue for them is, I'm sorry, medical science doesn't have the answer of why, but for now you're stuck and you can't have it.

Dave: Could it be a gluteomorphin effect? The opiate effect that comes from improperly broken down gluten going into the brain and they feel like crap?

Dr. Shoemaker: Reasonable question. I don't think anybody has even looked at that as far as the effect of any gluten compounds in the brain. If there is published data on that, it's not something I've read. Of course, that doesn't mean too much.

Dave: I believe there is some on that. In fact, I reference it, probably in my Better Baby Book. If memory serves, it's there. I'm giving a talk at the AutismOne Conference coming up here, which is a conference for parents of autistic kids. I'll be talking in part about mold and toxins and things like that and my own experiences.

The people I've worked with, also Dr. Tom O'Bryan, who put on the Gluten-Free Summit, has spent years looking at auto-immune responses to gluten, just a total genius of a guy. We've also had some conversations, both about mold cross-reactivity with gluten as well as that opiate effect of it. I'm certain, given that those two,

from those two sources, that there are valid studies. I'm pretty sure I've read one, too, but it's foggy.

Dr. Shoemaker: I would love to learn, there are so many holes in my knowledge that when I listen to smart people tell me things I've never heard of, the answer is, "Feed me, Seymour." Let me learn a little bit more here. I've been stuck in my own little niche of the world for so long and still haven't got that thing figured out right. If you ask someone like me to comment about something I don't know about, I'm not going to be of any help to you. If you take a study that's a proof of concept study and you put two things in and neither one is known to be related, you're going to lose any credibility of the that study, so pick one and follow through with it.

The autism group of people, I don't think that mold is causative, having seen a small number of autistic kids, maybe a hundred or so. I know full well that if you take an autistic kid and you make him moldy, you sure make his autism worse. Inflammation is not a friend of the autistic person.

Dave: I believe that there's chronic auto-immune inflammation in autism and it's hard to know exactly what it is that pushes the immune system over and that sometimes it may be mold, sometimes it may be mercury, sometimes it may be some other stressors. Something happens that pushes you over and it's usually a cumulative burden. I wouldn't say mold is causative. I think in some cases, particularly one in Huntington Beach, it sure looks like it. Even a court said it was causative, but it's one of those things where it's certainly not beneficial for anyone on the planet and it's much more harmful to some than others, which is one of the reasons I focus on that in my work.

Let's switch gears a bit. Let's talk about things like wheat, corn, soy or, dare I say, coffee. What's the mycotoxin risk in your experience? What's the potential health impact of people eating these things that sit around and do spoil during transport, storage, during growth. How important is it?

Dr. Shoemaker: We have looked at aflatoxin as our target and have not looked at stored wheat or stored corn or stored coffee. I'm somewhat at a loss to answer that with any data. In answer to one criticism of my ideas in deposition, I had some ten people that were really good folks and willing to go along with a wacko idea, who I asked to eat as much peanut butter in a day as they could. On average it was about six pounds of peanut butter per person. This was good Skippy chunk and maybe someone's a Jiff fan or something else, but I had Skippy. We looked for evidence of aflatoxin poisoning, despite FDA regulations and rules and limits, and we found no change in any of the markers that I could look at in blood.

That was not proteomics, it was a limited number of testing. It certainly was not genomics, but the whole issue is that in all of these ideas that you have, whether it's coffee, whether it's this or that, any assessment we've got has got to include your friend, glutathione. Glutathione deficiency, I think, is overstated.

David Purlmutter called me the other day. He's getting ready to retire and wants to do some phone consults like I do, and he wants to do some teaching, and "What's it like not seeing patients?" "Well, you're going to miss patient care like crazy." He, in my mind, is the father of glutathione data, that great study he did, injected a guy with Parkinson's and for 45 minutes he was fine.

Rich Van Konynenburg for the longest time wanted it and everybody to be on glutathione, this, that and the other, and then there are some docs that swear by glutathione. Yet when we look at the effect of glutathione supplementation, whether it's by injection, whether it's by tablet, whether it's underneath the tongue and try to show measurable changes in proteomics, it isn't there.

Glutathione is cited repeatedly as contributing to break-down of mycotoxins in gut and duodenum. Can I refute that? No. Mycotoxins might be there, but do they get out of the stomach? With [inaudible 00:37:36] we know that a very small percentage

will, and if they get out of the stomach, if they get bound to a receptor, binds onto a free acetyl group, if they are engulfed by alveolar macrophage, for example, or an antigen-presenting cell, and Monensin is around, that mycotoxin will go into the side of the cell and the cell will die.

This idea of program autophagy is one of the cell basically killing itself, or apoptosis goes along with that, but basically, looking at consumption of the organelles of a cell as a defense mechanism because some cells will take things we can't metabolize and can't process, suck them in and then the cell gets chewed up. That becomes the mechanism to destroy things in A-U-T-O-P-H-A-G-Y. Autophagy is an important concept.

Dave: We use intermittent fasting on the Bulletproof thing in order to increase autophagy and protein fasting once a week. Definitely.

Dr. Shoemaker: Okay, but along with that, I don't know what microbes in the gut are going to break down mycotoxins. Face it, these are energy-rich compounds. they're carboxylic acid ethers with lots of oxygens, lots of energy tied up in double bonds. Man, this is fertilizer for somebody.

Dave: Yeah. I don't have it in the front of my brain, but I've seen the studies on which species break down different mycotoxins and it's all a question of where in the gut, where are they absorbed? It's complex. I don't think we have all the answers there. The comments about glutathione are really interesting. I know for cognitive function purposes, I feel a noticeable difference on glutathione. I make a liposomal glutathione with a lactadherin molecule in it as well so it absorbs through the gut lining using the same mechanism that one of the pharmaceutical companies uses for delivering large drugs into the bloodstream. It's an extreme bioavailability version of it.

When I've been exposed to a moldy indoor environment, less so from just food, taking like five doses of it, for me, it makes my brain feel better. I can start thinking again relatively quickly,

versus when I don't take it. Also, separately from it, I take charcoal, I take cholinesterase, I take a bunch of anti-inflammatory stuff and I basically knock the inflammation down in every pathway I know of and I increase glucarination with Calcium D-Glucarate.

Dr. Shoemaker: If you have one change that you've made, you've got a stable program and you know that this nifty liposome that you make is reliable and all that, that one is an even quicker and less expensive proof of concept study to do. For all the, I call them environmental docs, that love glutathione, I keep on saying, where's the data? Where's the data? Bill Ray had some data and he had multiple variables thrown in at the same time and if you don't control for multiple variables simultaneously, what do you have? Nothing. Bill Ray's stuff works for some of the worst patients I've ever seen.

Dave: [inaudible 00:40:49]

Dr. Shoemaker: He has glutathione, he has saunas, he has allergy treatments that he makes up. He's a really bright guy, but at the same time, if someone like me comes along who's not as bright as he is, and says, "I'm going to try this, too," can I reproduce what he does if I don't have something written down in a cookbook? That's the whole idea of having protocols, which is where I come in and say, "Look at you. You've got individual variation up the wazoo in what you're doing, and how do we know that that liposome is making the difference if you've done four interventions at the same time?"

There's answers and it's your enthusiasm and your youth that will contribute to getting these kinds of answers out there.

Dave: The idea of citizen science, the N=1 thing, comes into play here. There's the single variable testing. It's really important, but what I've discovered in terms of losing a hundred pounds and turning my brain back on and becoming way healthier then I've been at any time in my life, even though I'm over 40, is that you're not going to bake a loaf of bread by baking the yeast, then baking the water, then baking the flour. You've got to mix stuff together in a

complex system in order to create a result. What I tend to do for something like inflammation is, I put everything in that I can think of and then I pull single variables out to see if it stops working.

If there's five things causing inflammation and you pull out this one, no change, then you pull out this one, no change, you oftentimes won't see it. For instance, you're allergic to casein and you're allergic to gluten, if you pull just one of them out of your diet, you're probably not going to see significant results at all. If you pull them both out at the same time, all of a sudden, everything changes. The complex interaction of our gut biome, the external, the exposome, all the mold and other things we're tied to and all, makes eliminating single variables easier than introducing single variables, at least for getting rapid results. Any comments on that approach?

Dr. Shoemaker: In 2004 at the beginning of the Chronic Fatigue Meetings that were held in Madison, Wisconsin, I gave the first talk of the morning and said, "Whatever you do, do one intervention at a time. Record data and be very precise." Jacob Teitelbaum gets up after me he said, "Ritchie's science is fine, there's nothing wrong with it, but my patients want to feel better so I do everything all at once." There still is no clear assessment of is Jacob right or am I right, but if what Jacob is going to do is going to be sent to many people with heterogeneity of genomics, heterogeneity of genetics, heterogeneity of inflammatory responses, he's going to find that some people get better, some people get worse and some people have no change, but he's not going to know any one of those three.

Your idea's a variation of that, which is to remove one at a time. For example, it's very common for people that I see, who like supplements, to take 20 different kinds of supplements at a time. They'll have this, that and the other and I say, "Okay, do you know that your silymarin is actually healthy?" "Well, I don't know of any difference." I said, "Have you stopped it to see if you felt worse?" And they say, "No."

Dave: That's a problem.

Dr. Shoemaker: "I've been told to take it." If you say, "Okay, let's get some of the inflammation cleared up and then take your supplements one at a time and remove them, and to do this basically repetitive re-exposure trial. We're going to take you off it, do you get worse, and if so, we'll put you back on it, do you get better? Similarly, if we take you off something and you get better, then do we give it back to you and do you get worse?"

You're doing, with food stuffs for example, taking away casein and putting back casein and see if they get better. They're different variations of the same thing, but I think you're still trying to address things in a more scientific manner than to say, "Take 20 supplements at once and I'll see you next year. Oh, buy the supplements from the lady at the front desk, it's a thousand dollars today for your half-price bill."

Dave: Yeah, it's a frustrating thing. The practitioners that I work with, they know that people get better on the supplements, but they don't always know exactly this is the one that did it. I decided a long time ago that one of the cheapest things I could have was expensive pee. In other words, I know that some of the supplements I'm taking might not, right now, be doing something. I also know that what I eat, what I breathe, whatever else I'm exposed to, the level of stress I'm under, that'll change and having the raw material there probably isn't harmful. If I can find research that says it is, then I'm probably not going to take that vitamin.

It's one of those things, it is very individualized and the notion of biohacking, of using devices to track how we're doing. I'm an advisor to the HeartMath Institute, so is hear rate variability a good measure for whether those supplements worked or not? Did it drop or did it go up? Heart rate variability is a pretty neat, short-term sign of the overall level of sympathetic nervous system stress. I can tell you that my sympathetic stress goes way up when I'm exposed to toxins or when I'm having a hard time excreting them. It does for everyone.

Dr. Shoemaker: I'm going to stop you on that, just for fun. If we look at exposures, we know that for some people affected by a moldy building or water-damaged building and they go in, they start feeling bad or even if they're not feeling too bad, they leave quickly, we know that there is going to be in a subset of those people, a significant rise of pulmonary artery pressure. If you have a rise in pulmonary artery pressure, that means it's harder for blood to get from the right side of the heart to the lung, which means the blood coming back from the lung to the left side of the heart, which we call venous return, is going to be impacted.

If you are trying to do something, like go up a flight of steps, and you've got reduced venous return from an exposure or maybe from the winter pork that you ate two days ago, what will happen is that if you don't control for PA pressure you will have a problem maintaining cardiac output. How do you increase cardiac output if you can't increase stroke volume because of venous return problems? You increase pulse rate. If you're going to look at heart rate variability, which is looking at pulse changes, you've got to control for PA pressure.

Dave: You can use heart rate to determine basically a food sensitivity. Your heart rate goes up by 16 beats per minute or more on a regular basis.

Dr. Shoemaker: The key thing is that if we know you don't have a rise in pulmonary artery pressure with exercise, that's an important variable to put in before you look at heart rate variability.

Dave: All right, I'm going to have to bring my buddies from the HeartMath Institute on to talk about that, because there's heart rate, but if you look at the change between the spacing of each heart beat, you're getting a different signal there. Even if the overall heart rate goes up, if the sympathetic stress on the organism is lower, the inter-beat variability will increase. Basically the spacing between each heart beat should vary regularly, even if you have a higher heart rate or a low heart rate.

Dr. Shoemaker: I knew we'd have a lot of good energy going today. Sinus arrhythmia is part of life that everybody has and so, once more, if we're going to try to bring some science in and to take your thoughts and your feelings to the masses, we need to have good controls put in there. Good controls is the basis of good science.

Going back to the very important part of N=1, being pretty primitive in how I've recorded data that was unusual in the past, I had a Ziploc bag that sat right in front of my chart rack and I had sticky notes of people with unusual conditions and when I saw two I had two of them written on the same sticky note. This was the very sophisticated way that led me to understand about gastroparesis being so common in people who have chronic inflammatory response syndromes. We used to think that GI function that was diminished was confined with suma contractility [inaudible 00:49:33] as our model to older diabetics with bad control. It turns out about ten percent of mold patients will have elements of gastroparesis, but it was just one after another of these sticky notes in my Ziploc bag that led me to say, "Hey, wait a minute, let's look at it systematically." That was a collection of N=1.

Dave: The cloud computing stuff that I've spent most of my career working on has changed the N=1 game. We can now do things like CureTogether, which is a website where people do this, and some other ones that I'm actively working to support now, where we look at, okay, who are people who have some similar observations here and then we can organize little tests. Before, we would have relied on you to notice this on your Post-It Notes and now it's something where between Google and between all the other things we can do, we can even coordinate things like, oh, let's all look at our 23andMe genetic profile analysis and see what's common between that. There's groups doing this.

Dr. Shoemaker: You want to look at the genomics from proteogenomics because that's so, so much better, but that's down the road. You know, there was a comment the other night, I think it was during the news, a fellow from Google, I think it was, was saying that Google

is going to revolutionize revolutions. The Internet will take down governments before anything else will. If this cloud technology you're talking about coordinates communication, is focused on a million people from Australia all the way around to South Africa, there's no end to the data that can't be collected and if the data is collected, somebody's going to have the computer savvy to mine that data. That's where the world's going to be, it won't be people with my Ziploc bag and the sticky notes.

Dave: I'm excited about the changes that come from that. There's a couple more questions that I'd love to ask you. The first one, is there a case that says people should be eating food that contains some amount of mold toxins in it? Are there potential benefits that we know about or don't know about?

Dr. Shoemaker: Interesting question. I know full well that my incidence of people with low levels of VEGF, Vascular Endothelial Growth Factor, is way, way more in coming out of moldy buildings than not. The incidence of cancer in those people is way, way down. If we look at the anti-angiogenesis movement that Judah Folkman from Children's in Boston kind of got started years ago, his insight, looking at what stopped new blood vessel growth needed to feed tumors, was almost like discovery of penicillin with Aldousander Fleming. He left Oakland a petri dish that had some epithelial cells in it and it was Friday night and he comes back on Monday and all these epithelial cells are all ruffled and crinkled and they're dying. He goes, "My God, look at this." In the middle, what was growing was colony of Aspergillus fumigatus.

Dave: Of course. One of the nasties.

Dr. Shoemaker: And Fumagillin was the first anti-angiogenic agent that there was. Now compare that to the possible benefit in reduction of angiogenesis to aflatoxin, which is reported to be associated with liver cancer, especially in China, and everywhere else. If you look at the microsystin literature, guess where you find liver cancer

increase with exposure? It's China and Australia. Are we looking at one variable of aflatoxin, another variable [inaudible 00:53:23] microsystin, or is there some sort of interaction between the two?

Dave: These are the things that I really want to know more about. In the meantime, my conclusion is that for people who are interested in being very high performing, there is no reason to intentionally eat even low levels of mold toxins. A very substantial number of people experience improvements, particularly cognitively, when they avoid them, which is why I test for them in my products the way I do. I've even developed some proprietary testing protocols. Partly, yeah, I'm a canary, so I'm more sensitive and I can feel stuff, but when I replicate that with lab testing and then I make those products, people who aren't canaries are like, "Wow. I had a different kind of day because I avoided these things."

That's kind of the root of the work I'm doing, in large part, because I really like to feel good all the time. The stuff that makes me feel good all the time, that I can replicate and make repeatable, seems to make other people do the same thing. There's a lot more science that I'm really interested in funding on this.

Dr. Shoemaker: The passion that I'm seeing in you and the desire to make things happen, to me that's an indispensable element that must be there. I hope that you can find the funding you need and some colleagues to join along with you in your quest. This does not sound quixotic at all. It doesn’t sound crazy at all. It sounds like you have a chance to bring your insights to a far bigger population. My concern is that I'm a bit embarrassed with that my profession, that being a licensed physician, includes a lot of people that don't like to read, that don't want to think outside the box. As such, physicians are even slower than politicians to learn things and certainly the attorneys are quicker along the way.

As you go forward in your quest, always challenge your own thoughts, your own hypotheses from today, challenge those tomorrow. That's part of my bulletproof world, is to say, "Did this assumption that I made actually bear out?" Another bulletproof

idea is the key to understanding, thank you Aldous Huxley, is casting out false knowledge. Here you've got 23andMe is fighting with the FDA. They haven't done anything as far as their stuff since December thanks to federal agency. If they're right, good, get the data put out. It is just a stumbling block, because until they can pass agency review, people are going to throw rocks at them. It's a reality.

Dave: I get some rocks and the cool thing is, is there are certain things you can do where it's painfully obvious that it works. "Oh, I lost ten pounds in a week and I had the best week of my life." At that point there are few regulatory agencies in the world that are going to stop people from wanting to do more of what makes them feel much better. If you can't feel it working, then it's probably not as good as it could be.

We're out of time, but there's one question I've asked every guest on the show. And that question is, what are your top three pieces of advice for people who want to perform better? This doesn't have to be just from your work as a physician, but your entire life's lessons, three most important pieces of sage knowledge for us.

Dr. Shoemaker: The most important one comes from the Greeks and that's be true to yourself. Being true to yourself means that you're honest, means you're thorough, you look at things with rigor. The second piece that I have to remember since I tend to say too much is, the tongue is the enemy of the neck, and by all means, recognize who your audience is, what your audience is going to be saying and thinking, and then recognizing as well is that if we really want to look at any kind of social situation, you need to look to see where the energy is. For some people it's sex, for some people it's aggression, for some people it's money, some people it's power. In your case I see the tremendous driver being knowledge. As that, I will just go back to the Aldous Huxley quote, is that as you refine your knowledge and as you continue to cast out false knowledge, then when you have the understanding, then you're ready to go

forward and people can throw all the rocks they want but your understanding will take the day and win it.

Dave: Wow, that's awesome. Dr Shoemaker, thank you a ton for being on the show today. It's an honor to get to talk to you in person because your writing has literally helped me understand some things about what's going on in the gut, what's going on with the inflammation, that has not just helped me, but it's helped the people that I've worked with, some of the writing I've done, where people have read that and been helped. Your knowledge is definitely spreading.

Where should people go, other than to buy your books, Mold Warriors and Surviving Mold, on Amazon or somewhere? Do you have a website that they should go to?

Dr. Shoemaker: Survivingmold.com is just filling up with really nifty things to look at. We're bringing in writings from multiple other practitioners and providers. There's a lot of remediation. That's a good place to go. There's an awful lot of free downloads, frequently asked questions are important. People should really know what their [Visual Contrast Sensitivity test is and what that of their kids is, can do that. It's a few bucks, but it's worth looking at.

Dave: Wait, we didn't talk about that, but let's do that.

Dr. Shoemaker: Another day.

Dave: It's out of order. If you have 30 seconds to explain what a VCS test is, it was on my list of questions. I just forgot to ask it to you.

Dr. Shoemaker: If we look at the reduction of blood flow into certain organs, we can measure, using MR spectroscopy, rising lactate in the brain. But how can we measure the so-called capillary hypoperfusion elsewhere in the body? We can measure directly velocity of flow in blood vessels in the retina in the neural rim of the optic nerve head and reduction of flow will create a neurologic deficit in a

function of vision that impacts what's called contrast, and that's the ability to see a gray image against a gray background.

If you think for a minute of a white image on a white background, if you're driving along on a sunny day in Florida where everything is made of coral and this nice blond lady with her white shirt gets out of her white convertible, are you going to be able to see her, of white on white? If you were a fighter pilot, are you going to be able to see the MiG coming out at you out of the gray, gray on gray?

Contrast vision is one element of our neurologic function of vision that's affected dramatically and rapidly by capillary hypoperfusion coming inflammatory responses. We can measure it, record it, use as a monitor to show improvement with therapy. Also, it will show relapse if there is re-exposure, but it also will show us stability if there's no exposure and treatment has been obtained.

Dave: The translation of that for people who are listening, this a biohacking technology. By looking at the test that Dr Shoemaker has created, and seeing if you can differentiate between fine shades of gray, you can tell something about the state of your brain that you otherwise wouldn't be able to tell. It's pretty cool. I've used it myself.

Dr. Shoemaker: I never have thought about that as biohacking, but you're exactly right and thank you for that. It was worthwhile talking to you, not just to meet you, but to learn about VCS is a biohacking device. That's cool.

Dave: Thanks, Dr. Shoemaker. Have an awesome day.

Dr. Shoemaker: Okay, man. Keep in touch. Bye-bye.

Quick Reference Guide

- VIP: Vasoactive intestinal polypeptide
- Dr. Shoemaker's paper on VIP
- Chromosome 6
- HLA DR: Human Leukocyte Antigen is the name of the gene that encodes for major histocompatibility complex (MHC) relating to the immune system. Resides on Chromosome 6.
- "24-25% of people cannot make adequate antibody responses" to water damaged buildings
- TGF b-1: Transforming Growth Factor Beta-1 is a polypeptide member of cytokine family. Performs cellular functions including cell growth, proliferation, differentiation, and apoptosis.
- VIP Treatment: To see if someone will tolerate VIP for treatment you get a baseline blood sample of TGF B-1 and track symptom changes and take another blood sample in 15 minutes. If TGF B-1 goes up its possible the person is coming from a mold environment.
- "TGF B-1 induces production of compounds that block correction of brain damage after the fact. So if you have traumatic brain injury, if you got concussion and all this stuff, you start making stuff called glial fibrillary acidic protein…that stops the reassessment of interaction of these fibers called Purkingy fibers in the brain. So not only is there an acute injury but that acute injury is multiplied by a genomic change."
- Neuroquant article by Dr. Shoemaker and video presentation from Virginia Institute of Neuropsychiatry
- Key to having tight junctions in gut non-permeability: MSH: Melanocyte Stimulating Hormone
- Eimeria Parasite (of malaria family) in baby chicks. Farmers give the baby chicks Monensin and Nigericin which can prevent the release of the endosome which will create insulin resistence.
- Metabolomics: scientific study of unique chemical fingerprints that specific cellular processes leave behind.
- Autophagy
- Proteogenomics
- Vascular Endothelial Growth Factor (VEGF)
- Aspergillus fumigatus
- Visual Contrast Sensitivity (VCS) as biohacking tool: A biohacking technology by looking at this test you can tell things about the state of your brain by differentiation of shades of gray.

Featured

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Upgraded™ Glutathione Force

Podcast #61 – Gluten Sensitivity, Celiacs, and Bulletproofing Your Gut with Dr Tom O'Bryan

HRV HeartMath Inner Balance

Introducing Intermittent Fasting Blog Post