Announcer: Bulletproof Radio: The State of High Performance.

Dave Asprey: You are listening to bulletproof radio with Dave Asprey. Today's cool fact of the day is about your lungs and we all know that you use them to breathe because … Well that wasn't a cool fact but here's what you didn't know. Did you know that your lungs help to make blood cells? Well it turns out no one else knew that either because a guy named Dr. Mark Looney at UCSF just discovered that your lungs are actually helping to make your blood cells and all of the assumptions we've made in medicine, nutrition, exercise, pulmonology, did not take that core fact into account.

Dave Asprey: If someone says, "You can't do that, that's impossible," well maybe it's possible now that we just found out your lungs make more than 10 million platelets per hour and we missed it. What else have we missed in biology? I don't know but I'd like to find out. Keep listening to Bulletproof Radio and you'll hear some cool stuff because today in particular, I'm really excited about the show. This is a show that's brought to you live from the American Academy of Anti-Aging Medicine, which is where I met my wife, Dr. Lana, 14 years ago.

Dave Asprey: To me, this is like Comic-Con because I'm a biohacker and some people would like to see superhero capes. I'm all about the superhero capes, don't get me wrong but when you get these people who are inventing fields of medicine or pushing limits, that's just … That's actually real superhero stuff. Today's guest is Dr Andy Heyman, who is the Director of Academic Affairs for A4M and he's the Medical Director of Integrative Medicine at George Washington University. Who has been studying at a crazy deep level Lyme disease and toxic mold and what they do to our genes and he's come up with some fantastic things here.

Dave Asprey: Now you might be listening saying, "Why do I care?" If you saw my documentary on toxic mold … It's at moldymovie.com. You can watch it for free right now and I funded this out of pocket. Interviewed a dozen experts, including Dr. Heyman. Not Heyman who I on the show but Dr. Mark Heyman, as well as Dr. Ayman and a dozen people like me who just got taken out at the knees in different ways by mold. You would understand that a hundred million structures, probably including your kids' school, have toxic mold in them right now.

Dave Asprey: Breathing it is even worse than putting it in your food or drinking it, dare I say, in your coffee. Yes, Bulletproof coffee beans are carefully made and lab tested to be free of mycotoxins because they jack you up. Well I've got a guy with impeccable credentials who's been studying mold for years. Looks at what it does your hormones, to your genes, to your brain, to making you tired. We've had other people on the show who talk about how toxic mold is one of the big things contributing to Alzheimer's disease and there are links to cancer, heart disease and everything else.

Dave Asprey: This is a big thing going on in your life, Whether you Are specifically dealing with fibromyalgia or chronic fatigue and if you've heard me talk about Lyme. I think Lyme and mold are integrally connected. You never really get Lyme until you've

had toxic mold exposure. I could be wrong. We are going to find out in the interview today with Dr. Andy Heyman. Welcome to the show.

Andrew Heyman: Thanks Dave. Thanks for having me.

Dave Asprey: How did I do in that intro?

Andrew Heyman: You did great.

Dave Asprey: Now, how long have you been studying mold?

Andrew Heyman: I was forced into it in a sense, not unlike you and to me there were two phases. The first was I had spent 16 years at University of Michigan where I did my training and then I was on faculty there in our Department of Family Medicine and my expertise even back then was in integrative medicine.

Andrew Heyman: I honestly thought I knew everything I needed to know at that point about treating complex patients using multimodal therapies. I then decided around 2009, 2010 to move to Virginia and I bought a private practice there and I started seeing patients that did not fit a profile that I was used to seeing. They were far sicker. The memory loss, the word finding difficulties, brain fog, fatigue, weight gain.

Dave Asprey: That's what I had my 20s. It's horrible.

Andrew Heyman: It's awful. There were a mess and I had a suspicion that maybe it was some sort of exposure but I couldn't figure out what it was so I started doing a little bit of research with George Mason University. They are a local university in Virginia and they developed a pretty good line test. Turned out a portion of those patients, had Lyme and definitively.

Dave Asprey: Which I definitely definitively had as well.

Andrew Heyman: Definitively. I said, "Okay, so now we are onto something" but a portion of the patients didn't but they had all the same symptoms and 2012 and '13 I started feeling like I was having some of those symptoms as well.

Dave Asprey: Living in Virginia, that's-

Andrew Heyman: Living in Virginia. I did the test and sure enough, I had Lyme. I treated myself and was getting better but then 2014, I felt like I was hit by a truck.

Dave Asprey: Yes. I know that feeling. What happened?

Andrew Heyman: Total memory loss. Intense migraines. I would see a new patient in my practice and six weeks later would have no recollection of having met them. I mean it was really scary for me, what was going on.

Dave Asprey: Frightening. I bought disability insurance when that happened to me in my 20s.

Andrew Heyman: Awful. I was not used to that. I mean I trained for triathlons. I was always fit. I was pretty athletic. I felt like I knew my body but you wake up one day and you realize you are not yourself anymore but I couldn't get any good answers. It wasn't Lyme at that point but it kind of felt like Lyme. I started collecting more data and began working a bit with Dr. Ritchie Shoemaker and it turned out that I was sick from mold.

Dave Asprey: Now, Shoemaker is an interesting guy. He's a pioneer, I think the first clinician to figure out these fat soluble toxins from environmental mold were affecting you and that there's a direct effect from cells. He spoke at a Bulletproof conference several years ago and has a very, I'd say, rigid protocol for mold and there's been a lot of evolution from that original work but you got give that credit. He was a family doctor who just noticed this and like a bulldog, didn't let go.

Andrew Heyman: That's right. We continued to do research together. The model has absolutely changed and I have worked to expand the thinking in terms of what are the therapeutic options that are outside of that rigidity? I was sick from mold and I had a lot of sympathy for people now who felt the same and unless you knew the very special labs to run, you'll miss it.

Dave Asprey: In fact when I was sick from mold, I went to a really good functional medicine doctor and he said, "Dave, I'm really at my wit's end because my patients get better." He said, "They come in with allergies. You give me three treatments. They don't come back. You keep coming back" and finally he said, "I'm going to order an AIDS test." He said, "I don't think you have AIDS but I don't know what else to do."

Dave Asprey: I didn't have HIV or anything but one thing he did … On an allergy panel, I was allergic to eight of the top 10 toxic molds. Well that would imply exposure to those and that for me was what opened my eyes to say, "I need to go deeper on this" and it's not a candida problem.

Dave Asprey: Lyme was a distraction, to be perfectly honest, for me because if you have toxic mold in your house or in your workplace or your car, wherever it is, you could get Lyme because you probably have Lyme already. At least I've been saying this forever but let me ask you, the studies where they say you Lyme, RNA or DNA in your urine, 95% percent of people probably have one or two [inaudible 00:08:02]. Validity to that?

Andrew Heyman: Gosh. I would say they are two sides of the same coin. Maybe fast forwarding just a little bit because there were so many unanswered questions around this whole subject of Lyme and mold, we started to do some very advanced genomics research.

Andrew Heyman: What we found is that even though the symptoms are typically the same between Lyme and mold and the proteomic markers, the blood labs are the same, the type of inflammation that's generated, there were two things that we saw that were different.

Andrew Heyman: The first was when you listen to people who are sick from Lyme and mold. They almost always talk about cognitive issues, the brain fog, the word finding difficulties, the memory loss. We started scanning people's brains and we in particular, looked for areas of the brain that might appear to be injured.

Dave Asprey: This is fMRI, I expect.

Andrew Heyman: This is NeuroQuant.

Dave Asprey: NeuroQuant. Okay, cool.

Andrew Heyman: We measured by volume different areas of the brain and what we found is that against our hypothesis, that sure enough the brain was damaged from the inflammation for mold and Lyme but the injury pattern was different between the two.

Dave Asprey: That's fascinating. When I look back at my first … This was a SPECT scan from Dr. Heyman years ago. He actually … In the notes it says, "Chemically induced brain damage" and it was the chemicals from the mold that was in my house. This is a real thing. I know if you are listening to this you might say, "Oh, I probably don't have that" but how prevalent is this in the US?

Andrew Heyman: We estimate that up to 22% of the population is vulnerable to these sorts of conditions. That's 40 million.

Dave Asprey: Shoemaker's number was 28. Yours is lower. What happened?

Andrew Heyman: No. It's … We've refined it.

Dave Asprey: It's refined, okay.

Andrew Heyman: It's 22%.

Dave Asprey: Cool.

Andrew Heyman: 40 million people, at least half of all buildings in the US have a mold problem.

Dave Asprey: That was my data as well.

Andrew Heyman: You think about the burden in the way that people present with just garden-variety depression, weight gain, fatigue.

Dave Asprey: Yelling at your friends.

Andrew Heyman: Yelling at people. This is what I saw all day long at my family medicine practice and you think … When you know how to scratch the surface, it's this and you start to think you are a little nuts as a practitioner because it's so common. You say, "How could I have missed this for so many years?

Dave Asprey: Because I do triathlons, I am high functioning. All of a sudden you are not. Going through it, it's a little bit terrifying but you also start to feel like you are probably a bad person because of the emotional variability that comes with this, where you just completely yell at someone or flip someone off in traffic. Why did I do that? I must be a bad person and what's going on is literally, you are being dosed with something.

Andrew Heyman: That's right and it's amazing you say that. Just last week … Because I think 90% of the patients I see in my clinical practice are sick from mold and Lyme.

Dave Asprey: Is that because they are seeking you out or is that just because it's so common?

Andrew Heyman: They find us. We don't advertise. It's all word of mouth but-

Dave Asprey: Sorry. You are going to be a little swamped after this show.

Andrew Heyman: Yeah. What I told my staff though is that … Just last week because we have some new front office workers. I said, "This is a different population and sometimes they are going to be patients that are hard to manage."

Dave Asprey: What do you mean, "Sometimes?"

Andrew Heyman: They might yell and scream or they might forget things or they might feel more volatile reactive to you than normal and for a long time I didn't understand that. I would get mad at my patients because I felt like they were being unreasonable. Now I know that this is a brain on fire and that's-

Andrew Heyman: To me, that's what I tell my patients. It's what I now tell my staff. I said, "You just need to know that part of what you are seeing in the way people are dealing with you on the phone, is because their brains are not working very well." We found some of the answer in the NeuroQuant because this is literally brain damage that's occurring because of the inflammation.

Andrew Heyman: That has to become a feature of the treatment as well. That these patients will not get better. Even if you remove the mold, even if you treat the Lyme, even if you turn off the inflammation, they are left with damaged brains. That has to be managed too.

Dave Asprey: You can restore that though.

Andrew Heyman: We can.

Dave Asprey: Because I know that my hippocampal volume is 86 percentile, even though I've had huge amounts of toxic mold exposure growing up as a child, as an adult and I don't have any abnormalities in my NeuroQuant anymore. My SPECT scan shows a perfectly even brand with no scalloping and holes. My blood flow is probably not quite as high as I want it to be but overall, I mean I was a complete shit show.

Andrew Heyman: Yeah, that's right.

Dave Asprey: Neurologically and biologically. If I could come back from that, I imagine most people could, who didn't live in it for decades.

Andrew Heyman: That's right. You can. Now, we've been looking for special compounds to do that. One in particular that we called … Out of the school of pharmacy in Beijing. Is a very special neuroprotective ingredient from Chinese ginseng, called Rg3.

Dave Asprey: Oh, interesting.

Andrew Heyman: There's the Rb line of ginsenosides and then there's the Rg line. There's Rb1 and Rb2 and Rb3 and there's Rg1 and Rg 2 and Rg3.

Dave Asprey: When we are talking about Rbs … Because Rbs will not fix-

Andrew Heyman: Not Rb. It turns out, Rb1 and Rb 3 are the most neuroprotective and Rg3 in particular, is the best. Rg3, we were able to get their raw material. We combined it with nicotinamide riboside, which is an NAD precursor.

Dave Asprey: Absolutely.

Andrew Heyman: We made that-

Dave Asprey: We talked about that on the show, by the way. We just did a whole episode on it.

Andrew Heyman: Well NAD is one of my favorite molecules and so we have compounded that into a nasal spray. When I identify a patient who fails their visual tests and they have an abnormal NeuroQuant, their blood labs are really inflamed, I say, "Okay. You have an exposure.' We get them on the Rg3 nicotinamide nasal spray.

Dave Asprey: Give me some.

Andrew Heyman: Right away. It is amazing stuff.

Dave Asprey: I want to try.

Andrew Heyman: There are … I can tell you, it works in people who have had traumatic brain injury and a concussion, brain is on fire because of exposures, even intense stress. There are a lot of Navy SEALS out, deployed in combat right now, that are carrying Rg3 and they will tell you that their focus and concentration under stress has remarkably improved.

Dave Asprey: That's not prescription if it's-

Andrew Heyman: Well right now it is prescription but we are looking for … We are about to be able to launch a sublingual, so it's over the counter. This is a really, really special product. It's been a lifesaver for us in this mold and Lyme population.

Andrew Heyman: It's not the only thing we do but it's really important but you are right. You got to protect the brain but when we saw the differences in the brain scan between Lyme and mold, we asked the question why?

Andrew Heyman: That led us to taking the deep dive down to people's genes and that's where we found the magic. That is to say, it turns out that there are certain groups of genes that turn on like light switches when a person is exposed to Lyme and mold and they tell the body to make inflammation.

Andrew Heyman: These genes won't turn off on their own, even if you remove them from the mold, even if you treat the Lyme. These people can remain sick for months and years, for the rest of their life.

Dave Asprey: It took me a long time to get better.

Andrew Heyman: It's a journey and it turns out that it's different sets of genes that are ignited between Lyme and mold. We can now tell the difference between the two groups, even though the symptoms are the same.

Dave Asprey: What are the percentages of the population dealing with each one that you've seen? I mean granted, you' are in Virginia so your patient population is going to be whatever it is but are we … Is this is roughly half and half? Is it 80% Lyme, 20% mold?

Andrew Heyman: We … Interesting. It's a really good question. At least in our data set we've looked at 6,000 patients now that we track formally. 80% of them are from water-damaged buildings.

Dave Asprey: There you go. It's not Lyme. It's mold.

Andrew Heyman: It's not Lyme.

Dave Asprey: I've been saying that forever. You just said it. It's not Lyme.

Andrew Heyman: It's not Lyme.

Dave Asprey: Well maybe there's our title for the podcast, it's not Lyme.

Andrew Heyman: It's not Lyme and that can be really hard and dicey when a patient comes in. They are convinced it's Lyme. They have been told it's Lyme.

Dave Asprey: Spent $100,000 $200,000 fixing their Lyme.

Andrew Heyman: Exactly and they are not any better.

Dave Asprey: Months of antibiotics that didn't work and whacked your antibiotic … Sorry, whacked your mitochondria.

Andrew Heyman: That's right. Then we do genomics. We do the NeuroQuant. We do this, that and the other and everything points to mold. How do you break that to a patient? How do you tell them potentially all of this time it was something else?

Dave Asprey: In my path, I got really pissed off. I actually remember going into the doctor. I moved into my first … The first place I ever bought was a little two bedroom, crappy condo and in the Bay Area and it turns out it did have water damage. I didn't know it was dangerous at the time, in my early 20s or something. We pulled up the carpet and it was all wet underneath the carpet so we said, "Oh, that's weird." We threw away the carpet and put down some hardwood flooring but of course-

Dave Asprey: The mold behind the walls, all sorts of stuff, a neighbor's leaking water heater but I never even knew there was a mold problem until I moved out and that's what had happened. I went to the doctor, a normal doctor. I said, "I feel like I've been poisoned. Nothing works. I'm a wreck. I don't know what's going on." Long and short of it is, I said, "Vitamin C helps." He said it would kill me. I said, "You are fired and you don't know who Linus Pauling was."

Dave Asprey: I spent four years studying all the things that could be wrong with me, I mean every night until I would just fall asleep at my desk. This is up to me. Doctors are useless and a little bit anger, plus I had mold brain. I was pissed off at people. I went into the doctor and I said, "I think I might have candida," which has a lot of the symptoms of mold. It gets turned on from living in a moldy environment. You onboard candida. "I might have Lyme disease."

Dave Asprey: "I might have mycoplasma. I might have mercury poisoning. I might have …" I said, "For each of these, I don't want this lab test from this." The doctor said, "Well let me prioritize the list" and she actually said, "Let's test for Lyme first." She said, of course, "You have Lyme," because I did have Lyme. I had active Lyme. My wife and I started a company that could test for Lyme and so we treated the Lyme for a long time with a bunch of antibiotics and oh, I don't get better.

Dave Asprey: It was only when we got to the mold then I started doing ozone and mitochondrial stuff. I was like, "Oh, you can turn everything back on." If I would have had the knowledge you are offering right now on the show, I would have gone straight to mold and that's what I'm telling people all the time, "Look, choose the most likely target. Even if you had a bull's eye rash, it doesn't matter. Go to the mold and that's where you start."

Andrew Heyman: Yeah, that's right.

Dave Asprey: You agree with this now, clinically?

Andrew Heyman: I … With 100%.

Dave Asprey: It makes me so happy. All right.

Andrew Heyman: We know this now based on the research that we've done but also because we have a definitive answer in the new nanostring tests that we developed.

Dave Asprey: Tell me about that. What is a nanostring test?

Andrew Heyman: In the new world of Omex, there's a chain of events that occur from the DNA to the RNA. DNA makes RNA and RNA makes proteins and then proteins make small molecules. That's the linkage between genomics, transcriptomics, proteomics, and metabolomics. What we do is we look at the RNA that's being made off DNA. That's transcriptomics. That tells us which genes are on and which are off.

Andrew Heyman: What we did is we originally isolated 2000 genes that we thought were candidates for abnormal reactions to mold and Lyme. We then isolated to 900 and at that level, especially within the mitochondria, which turns out there is overlap with inflammatory pathways, 500 extra genes were turned on inappropriately for Lyme patients. 700 extra genes were turned on for mold patients but they were different groups.

Dave Asprey: Wow.

Andrew Heyman: It's almost like instruments in a symphony, where certain instruments need to play at a certain time and you get melody and harmony and the cell knows what to do but when all the instruments are playing at once, it's chaos. The cell metabolism that results is incredibly impaired. Mitochondrial output is incredibly impaired and people are tired as a result.

Dave Asprey: I know that feeling.

Andrew Heyman: A nanostring then is a subset of the 900. We now have isolated 215 genes that are high candidates in terms of reaction to mold and Lyme. We can now tell within the 215 … Is it a mold exposure because certain genes turn on? We can

tell Lyme. We can even tell post Lyme. That in fact if a person had treated Lyme, a different set of genes ignite but they remain sick and now we even discovered pathways related to what we call hypometabolism. The cell goes into a hibernation state.

Dave Asprey: You mean the stuff that made me weigh 300 pounds? That one?

Andrew Heyman: That's correct. Yup. Interestingly part of that, there are five genes as part of hypometabolism that are part and parcel to the … What's called the mTOR pathway, which is the aging pathway. Those get injured so people gain weight. Their mitochondria become inefficient and this is likely the setup potentially even for cancer.

Dave Asprey: Absolutely.

Andrew Heyman: Because that's the metabolic profile of a cancer cell, which is poor ATP output and impaired mitochondria.

Dave Asprey: If you look at what mycotoxins, these mold toxins do to mitochondria, they absolutely do exactly those things.

Andrew Heyman: That's right.

Dave Asprey: They can do it directly and it sounds like they are doing it genomically in ways we didn't' know about.

Andrew Heyman: They do it genomically and they injure the cell membranes around the mitochondria so you get these very shaggy impaired cell membranes. They are not efficient at excreting waste or absorbing nutrients and you get impaired cell-to-cell communication as well. It is a disaster at every level for the individual, all the way down to their genes.

Dave Asprey: Are these the HLA genes that have previously been identified?

Andrew Heyman: That's an interesting question. HLAs are on chromosome six and we have identified about nine haplotypes or genes that predispose people to these illnesses. That's where the 22% number comes from. That's different than if you do get exposed and you are in that 22%. These other genes turn on in the mitochondria.

Dave Asprey: Oh, so you look at mitochondrial genes?

Andrew Heyman: We are looking at mitochondrial genes.

Dave Asprey: That's where all the bad stuff is happening.

Andrew Heyman: That's right.

Dave Asprey: Thank God.

Andrew Heyman: It's all mitochondrial genes.

Dave Asprey: You are even cooler than I thought.

Andrew Heyman: Well I try. Now we can use the nanostring and we just made it available two weeks ago.

Dave Asprey: This is a lab test, basically?

Andrew Heyman: It's a lab … It's a blood draw.

Dave Asprey: Okay. Sign me up.

Andrew Heyman: It is an amazing breakthrough.

Dave Asprey: Can I get one here at a A4M?

Andrew Heyman: I'll see if I can grab a syringe.

Dave Asprey: There's got to be a few doctors floating around.

Andrew Heyman: We'll need some dry ice. When we have … As we've cultivated the science, I showed it to … We showed it to some genomics research colleagues at George Washington University and they said, "We want to run the test." The analytes now go to my university.

Andrew Heyman: To me, it's finally a bridge between our world and major academia, which is to say they've looked at the work that we've done and they said, "Wow. This is incredible. This is a major breakthrough in fatiguing illnesses" and you use genomics to figure it out.

Dave Asprey: We've got somewhere … I would … Depending on how you want to do the math but there's somewhere around 80 million people. You mentioned 40 million before but you look at the number of people in the US and incidents of mold and whatever else. Many, many, many tens of millions of people who have molds or think they have Lyme and maybe do.

Dave Asprey: The people listening to this show are going to share it with all those people and then the Bulletproof customer support lines are going to just be overwhelmed with how do I find a doctor questions. Your test came out two weeks ago. There can't be that many people who have this and unfortunately, the show probably just created an avalanche of that. Where do people go to find a doctor who can do this kind of test?

Andrew Heyman: Right now, actually they can go to the Surviving Mold website. That's where the test … They can order the test and then they just have their blood drawn locally.

Dave Asprey: Basically, people can get a local draw?

Andrew Heyman: Yeah.

Dave Asprey: Okay. Good deal. You basically have to order a test kit and have it sent to you?

Andrew Heyman: Right. Now we are working on creating a model where you don't need to go through a physician to get the test. I think that would be better for the public because there are too few doctors that understand this illness and I … My passion right now is to create as much public awareness as possible and getting testing into the hands of people, directly.

Dave Asprey: Here's one thing we can do. We can have this at the Bulletproof upgraded labs down in Santa Monica, The Beverly Hilton. We can carry it and it is not okay that you have to have a permission slip from your doctor and pay them in order to have data by your own body. It unethical. It's unconscionable and especially in the states that allow doctors to mark up the test and sell you their time.

Dave Asprey: I don't think that's reasonable. You should order your lab tests and then go to your doctor and say, "Could you please help me interpret these?" If the doctor says, "That's the wrong lab," than okay, you shouldn't order that already but if you want to pay for the consult, that's great but to require it by law is stupid and unfair and just nasty on every level. It's the Darth Vader mod for medicine. I don't know if you agree with me.

Andrew Heyman: I just completely agree. That has been my agenda from the beginning, of trying to commercialize the test and that is to say, we knew in the very, very beginning a requisition would need to be filled out but if we could shift to what we call a CLIA approved lab that then could run direct to consumer, that's where I want the nanostring house.

Andrew Heyman: It is not fair because there are too many people who are sick and they are not going to get any answers from their local physician. I would rather them have the chance to make their own diagnosis and say, "Finally, this is why I feel so terrible."

Dave Asprey: All right. We can … We have a doctor on staff so at least the people in LA and people who come to visit labs, we can easily order any lab tests that they want, which is a really important thing. I'm looking forward to it being direct to consumer.

Andrew Heyman: Yes.

Dave Asprey: All right. What does it cost to do this?

Andrew Heyman: Well right now because it's new, it's 700.

Dave Asprey: That's pretty pricey.

Andrew Heyman: It's pretty pricey. I don't like the price and even worse is because it has to be shipped on dry ice.

Dave Asprey: Oh, a pain in the-

Andrew Heyman: A pain, exactly. With volume, we can get the price down and I think more reasonably, if we can get into the 300 range or so … It's genomics. It's never going to be 50 bucks but-

Dave Asprey: Let me just say it. There's a reason I spent … When I started Bulletproof, I spent $300,000 in 15 years, first getting rid of all that mold and all that … Basically diseases of aging I had when I was young and it wasn't just mold. There's other stuff, bad diet, whatever else but then I've spent a lot more sense then on reaching levels that I didn't even know were in there, which is a big part of what I do.

Dave Asprey: People who have been sick for six plus months where their brain doesn't work, they will spend everything they have to get better because there's nothing more precious than being able to remember what you are doing and wake up and feel like yourself and not yell at people. If you have mold damage to your brain, you actually do those things and you hate your life and every step is like you are walking through mud.

Dave Asprey: I would have put it on all my credit cards to spend $700 if I thought it was going to help me but this is a lab test that's going to tell you mold versus Lyme. Is it going to tell you how to treat it? Is it going to tell you what to do first?

Andrew Heyman: My ideal, and we've had a lot of discussions about this, is how do we …? I know you have already done a lot in this regard. How do we create really a full clearing house where all the answers are in one place with respect to, what do I do for my home and what do I do for me?

Andrew Heyman: How do I assess my home for mold and how do I assess myself to say, "I'm I sick from mold" and what do I do about these things? Right now because this is a real challenge for patients, I don't even know this is what I do all day long. There is no single resource where everything is together with credible science, with real recommendations that to me are reliable. Mold has become a little popular but the recommendations I find are all over the place.

Dave Asprey: A lot of them don't work.

Andrew Heyman: A lot of them don't work.

Dave Asprey: Like bleach.

Andrew Heyman: Exactly but also this … The quote, 'What do I do for myself?' I think there is a set of therapies that I now know are relatively reliable, natural, integrative, some prescription but there is a sweet spot and I feel like there's a lot people can do for themselves without necessarily being under the auspices of a professional.

Andrew Heyman: There are clearly instances where they need a doctor or someone who is well trained. That's also my role here at A4M and at GW because I'm so deeply involved in the education process. We are establishing training programs to train practitioners on how to deal with this thing. This is not easy stuff.

Andrew Heyman: This is really complicated genomics, proteomics, neuroinflammation and then what do I do about it? I've worked really hard to build an infrastructure where I can train practitioners. We've developed the science but now I want to reach the public and help tell that story because this is a public health disaster and I feel like it's only getting worse. It's not getting better.

Dave Asprey: Oh yeah. Some of the reasons it's getting worse, according to the research for MOLDY movie, is that when we spray glyphosate on our soil and things like that, we are actually ramping up the aggressiveness of the soil molds so they make way more mycotoxin than they used to.

Dave Asprey: I think we're seeing the results of that, where we have more sealed … More buildings that don't have good circulation. In fact, one of the guys in MOLDY, the documentary, is a hedge fund manager who lived in a brand new LEED building in New York City.

Dave Asprey: I just heard from another person who lives in that building that there's a massive mold problem there because they are saying, "Oh look, we saved you electricity. We didn't circulate air in the hallways," so the whole thing becomes a terrarium full of mold.

Andrew Heyman: Wow.

Dave Asprey: The people who live there get sick. 22% of them get sicker than everyone else but everyone there is increasing the risk of cancer, heart disease, all the bad stuff mold does, even if they don't feel it right now. I think we are seeing a lot more of that because of the combination of hyper aggressive molds and trying to save a few nickels on electricity to make environments where it sucks to live.

Dave Asprey: I'm almost … I'm going to make people mad here. I'm almost against LEED building standards because … Yes, I want to save energy as much as the next person but I do not want to save energy at the cost of 22% of people completely being taken out because the amount of energy that's consumed by that is not okay.

Dave Asprey: We need buildings that are built with biohacking in mind. The environment around you turns your genes on and off. Maybe you should change your building already. Come on LEED people. Turn on the fans already. I'll get off my soapbox there. Have you heard about Homebiotic?

Andrew Heyman: Is that the fogger or-?

Dave Asprey: This is a mist.

Andrew Heyman: It's a mist?

Dave Asprey: It's one of the companies I started and it's bacteria from soil that eats toxic mold as a fuel source. When toxic mold sends out its hyphae, it digests the hyphae, the roots of the mold, so it cannot reproduce. We've got third party lab results. I've been working on that company for about four years but at this point, it's 29 bucks and it works.

Dave Asprey: I want people … Before there's a hurricane, I want people to mist so you inoculate your environment because if you could prevent mold from growing in your house, that's the most important thing. I hit my window sills. I hit under my sinks and anywhere where there might be a risk and I live in a super wet environment and it makes a meaningful difference.

Dave Asprey: I feel like if people test their air before they buy the house, if they regularly inoculate stuff that keeps mold from taking hold and then we get the lab test that you've got for our bodies, you can, well dare I say, be bulletproof in that you've prevented the most likely parts of this. This is not a small problem. It's massive, massive and schools make it even worse.

Andrew Heyman: If I had a nickel for every school teacher that approached me, that said how sick he or she is …And it's a disaster for them because where are they going to go? They can't go to a different school to teach because that school is going to be moldy and they are all trying to get tenures so they can't retire early. They are trapped.

Dave Asprey: Schools are moldy because they always cut budgets on building maintenance. They always have these crappy roofs and then parents or teachers who raise the alarm, they basically said, "Oh, you are crazy." You show up with genomic testing like this, what's going to happen here is over the next five to 10 years every school, every government building, every hotel-

Dave Asprey: And there are more hotels out there, I know. I walk in and I say, "I'm out" and then I check out because if you sleep there, the next morning you wake up feeling hungover. We are going to have to rebuild a lot of our infrastructure. Insurance companies are going to hate this but when you have enough data, you cannot lie when you can correlate.

Dave Asprey: Here's what's in the air. Here's what's going on genetically in the brains. What are you going to say? Are you hopeful we are going to crack through this problem or do you think that it's going to keep getting pushed back?

Andrew Heyman: I am hopeful but also there are of course a lot of forces in place that don't want to recognize this issue and it just comes down to money I mean and that's all it is but the problem is the science is now becoming formalized to say, "We can really identify when a patient has become sick."

Andrew Heyman: This is not some broad label of chronic fatigue and fibromyalgia. I can show you proteomics. I can show you genomics. I can show you brain scans. They fit the symptom roster and it's becoming time.

Dave Asprey: Let's say someone uses the nanostring tests and they figure out, "I've got mold," since that's about 80% likelihood if they have either of the two, what are the short lists of things that they can do to fix themselves? Give me the concise list of-

Andrew Heyman: Sure.

Dave Asprey: I have mold. What do I do first?

Andrew Heyman: Certainly if we are going to just briefly set aside what do I do for my environment-

Dave Asprey: Yeah. Let's assume you moved out of your-

Andrew Heyman: Lets' assume you moved out.

Dave Asprey: Molded place and you lit all your belongings on fire that could burn.

Andrew Heyman: Correct.

Dave Asprey: Which is basically … If you take your stuff with you when you move from a mold environment, it doesn't matter. You are still in a moldy environment. Even your paperwork that has mold on it has to go. I still have a sealed box of paperwork. I only open it outdoors because it's full of crap from 20 years ago but that is a real thing.

Andrew Heyman: Yeah. Paper is the enemy. There's a few things that I find can be really helpful for people that are natural and it all gets back to really the gut brain connection. What do I do for the brain? I cheat a little bit. As an MD, I write the prescription for the Rg3 nicotinamide. That's called Synapsin but again, we are moving towards, hopefully an over-the-counter version of that.

Andrew Heyman: Then we start looking for other natural compounds and products that further turn off the fire in the brain. One of our mainstays, of course is lipids. The brain

is mostly made up of healthy fat or it should be but those liquids become damaged. We certainly do a lot of phosphatidylcholine. That's a core feature of what we do.

Dave Asprey: You can take PC orally, acetylcholine. You can take it intravenously.

Andrew Heyman: Correct.

Dave Asprey: Or you can even get some sunflower lecithin and you can put a scoop or two in your Bulletproof coffee. I like the nutty flavor but when I did the Bulletproof … It was the Better Baby Diet. We recommended huge amounts of that for women who wanted to get pregnant because having enough choline is really important. What's the form of choline that you recommend for mold people?

Andrew Heyman: Certainly, I like the phosphatidylcholine.

Dave Asprey: The IV or-?

Andrew Heyman: I do oral and IV but they also need phosphatidylinositol and potential and phosphatidylethanolamine because those are phospholipids that are more important for the mitochondrial membrane. Phosphatidylcholine is better for the outer cell membrane.

Andrew Heyman: The oral, typically you get all three. The IV is typically pure phosphatidylcholine. We have seen dramatic results in patients when they start turning over their lipid layer. I tell them they are doing an oil change and it's the lipid content in the body that harbors the mycotoxins and you have to turn that around.

Dave Asprey: Let's talk about that for a minute so people have an image. I like to imagine a cup of water and you put one drop of blue food coloring in there and it soaks into all of the water. Then in order to get rid of that, you can turn the faucet on and have more water go in there but it takes a long time to wash it out.

Dave Asprey: If you look at all those cell membranes in your body that are fats, these toxins from mold and Lyme, they soak into all of your cell membranes so you have to keep adding fat and flushing this out. The data from the Bulletproof Diet … I cited a study. I think it was around 745 days for 50% turnover of cell membrane Lipids. Any sense in that?

Andrew Heyman: You know what? That's probably a little more conservative than I would have guessed. I mean when you look at just turning over of omega-3s for example, that takes almost a year but the phosphatidylcholine layer takes even longer.

Dave Asprey: Oh, does it?

Andrew Heyman: Yeah. 700 days probably sounds about right.

Dave Asprey: That was 50%.

Andrew Heyman: Yeah. I mean I-

Dave Asprey: Four years later you are going to be-

Andrew Heyman: I tell patients … Because they say, "Oh, I've, I've been doing my motor oil for three months. I'm I done?" I say, "You know what? You are just going to get used to it because this is a mainstay of your therapy.

Andrew Heyman: I cannot get you better if I don't turn over your cell membranes" because part of the abnormal signaling down to the genes is because of the abnormal lipids. One way we correct that abnormal gene response is correcting lipids. You have to do that.

Dave Asprey: Wow. This is fantastic. Big parts of the Bulletproof Diet are, how do you increase bile turnover? How do you get more lipids into the body? Now, if your people are changing the oil and they eat just a few French fries on Saturday, what happens?

Andrew Heyman: They get a lot of bile congestion. One thing that I tell patients is that when your body makes inflammation and when you consume these abnormal lipids, they all are absorbed in the liver and they are emulsified in the bile and they get dissolved. They-

Andrew Heyman: It's called saponification and then dumped into the digestive track. Your liver and your bile has to be flowing normally and the last thing you should be doing is putting in trans fats, saturated fats because that's going to interfere.

Dave Asprey: Hold on. Saturated fats, that includes things like grass-fed meats. That includes things like-?

Andrew Heyman: Well I mean trans odd saturated.

Dave Asprey: Oh, there you. It's really important for people to hear that.

Andrew Heyman: There are better … The are healthier forms but what we see are ceramides, renegade fats, odd saturated fats.

Dave Asprey: VLC.

Andrew Heyman: VLC, very long chain fats. Those are the bad guy.

Dave Asprey: That's why you don't eat peanut butter and you don't fry crab.

Andrew Heyman: Correct. Amen to that.

Dave Asprey: The thing is this doesn't mean you get to eat three French fries, especially if you are working, either lived 180 like I am or recovering from something. They are not food. It's just like smoking.

Dave Asprey: Oh, I smoke on weekends when I'm trying to fix my lungs. You just don't do it. I'm not going to name who it was but here at A4M, I watched a dear friend eat four French fries two days before a major surgery.

Andrew Heyman: Oh boy.

Dave Asprey: I'm like, "Come on. We are at A4M. You don't do that" but people just do it because they think that … I mean maybe I'm oversensitive. I'm making a point here and I want you to disagree with me if I'm wrong but I mean how small of a dose, how much cheating is going to work?

Andrew Heyman: Well the last I heard was six fries.

Dave Asprey: If you are under six, you are okay?

Andrew Heyman: I don't know. I'm not really sure.

Dave Asprey: It's a small number.

Andrew Heyman: It's a very small number but the whole fat story is so critical to understanding this illness. You've got to get your fats right and if you don't, you are going to stay sick.

Dave Asprey: There were a couple of other compounds I wanted to talk about. I formulated a supplement called Curcumin Max, is one of the Bulletproof supplements and it's got Brain Octane. That's has caprylic acid, which … Caprylic acid is antifungal and Brain Octane is a specially processed caprylic acid.

Dave Asprey: It's extra pure, etcetera. That's the carrier system for standardized turmeric, plus Stephania root and Frankincense. Stephania root, I chose it because it was one of the few things that could turn off the inflammation that I had when I was moldy. I think getting in with lipids like that is particularly important.

Andrew Heyman: Huge.

Dave Asprey: Any experience with Stephania root?

Andrew Heyman: Some experience with Stephania root. A little bit more with Frankincense because it's the parent compound from Boswellia, because we know that blocks MMP9 and locs and coccs … Stephania, I have used over the years for my patients that are really inflamed but it's not a common ingredient in a lot of-

Dave Asprey: It was so hard to track down and it took a long time.

Andrew Heyman: That's a bummer too.

Dave Asprey: I think we are the only supplement company that uses Stephania. If you're curious, that Curcumin Max. I'm a little crazy myself on formulating. I want the levels that are studied … I'm going to put a cosmetic dose where it looks good and that one's in there and you Are not going to find it anywhere else. I know because we had to search everywhere But you found for real serious inflammation that that works?

Andrew Heyman: Yeah. you have to and I was getting there in terms of after the lipids, there are curcumins or turmeric that get into the brain. There aren't that many. You've got to work on repairing the lipid … The blood brain barrier. Chia and flax, which are also nice at contributing to sealing up the membranes.

Dave Asprey: Now, both chia and flax have substantial amounts of very unstable omega-3s. Even light and heat can mess with them and reasonable amounts of lectins as well. I've never had good luck with either one of those in terms of healing.

Andrew Heyman: Rally?

Dave Asprey: Yeah.

Andrew Heyman: We have had pretty good success with … As long as it's pure. They have to grind it themselves.

Dave Asprey: It's refrigerated or frozen.

Andrew Heyman: It's refrigerated. All of that.

Dave Asprey: You have to be really-

Andrew Heyman: Otherwise, it becomes very unstable very quickly.

Dave Asprey: That will make you much worse. If you have that bag of ground flax meal or the flax cookies-

Andrew Heyman: I tell people they can't use that. It can't be pre ground.

Dave Asprey: It can't be? You grind it yourself. Put it on something cold, in a smoothie and eat it right away?

Andrew Heyman: That's right.

Dave Asprey: If your grinder heats it up too much-

Andrew Heyman: That's right.

Dave Asprey: It's that unstable?

Andrew Heyman: That's right.

Dave Asprey: In those conditions it can be helpful, I agree with you but 90% percent of the world … Look, I have these flax muffins or whatever and that's ... I guess it's better than French fries but I mean-

Andrew Heyman: Probably.

Dave Asprey: I'm having so much fun talking about mold. I feel like we could talk for hours about this. The new test that you've got is called nanostring and you've got this-

Andrew Heyman: It goes by the name GENIE, G-E-N-I-E.

Dave Asprey: G-E-N-I-E, nanostring test?

Andrew Heyman: Yes.

Dave Asprey: Where can people get the new nanostring tests?

Andrew Heyman: Well it's so new. It's only been out two weeks so it's not the easiest thing to get but-

Dave Asprey: Can I get it at the Upgrade Labs?

Andrew Heyman: I think that's a great idea.

Dave Asprey: We'll let people do any tests they want. You have a fundamental rights to know what's going on your body. All right. I'm just making this up and I guess we can take this out of the show before we publish it, if we can't do this but let me get Upgrade Labs talking with your team and I'd love to get this out there and I don't … That's not available by mail order so people would have to go in there or can they ship it out or how-?

Andrew Heyman: They … Wherever they live, they just do a local blood draw and then it has to be put on dry ice and shipped to GW.

Dave Asprey: All right. I know for sure we can do the blood draw and we can stock the test kits at Upgrade Labs in Santa Monica and in Beverly Hills and in terms of getting it shipped out on dry ice and stuff like that, we'll figure that one out.

Andrew Heyman: Figure it out.

Dave Asprey: That will work really well. You could also Google Bulletproof Radio, Andy Heyman, H-E-Y-M-A-N, who's today's guest. Andy, thanks a lot for being on the show today and taking time out of your busy schedule A4M.

Andrew Heyman: Thanks Dave. I really appreciate it.

Dave Asprey: Thanks also, just for your work on making this real. 15, 20 years ago, this was stuff that they would give you Prozac for if you talked about it. They tried with me and this is a real thing. It's affecting people. It's affecting tens of millions or 100 million people and no one paid attention and you are one of the leading voices doing this.

Dave Asprey: Thanks for going out there and taken the arrows that it always takes when you are disrupting and being a game changer. By the way guys, did you notice what I did to plug my last book that just came out, Game Changers? It was that smooth you barely noticed, right?

Dave Asprey: If you haven't read the book, that's why you don't know how to do something as impactful as what Andy has done. What I would recommend you to do today is pick up a copy of the book if you haven't done it yet. If you haven't done it yet, it's probably just because maybe you are a bad person or maybe you are not a bad person.

Dave Asprey: You just got mold and you think you are a bad person because you have mold. Get rid of your mold and read the book and if you think you have Lyme, maybe you have mold and you need to re-listen to this episode. You need to check out the blog posts we'll put up with it.

Dave Asprey: Check out MOLDY Movie at moldymovie.com and we'll get the new nanostring test there at Upgrade Labs. All right. That's a long list of things to do but it's all good stuff. Thank you for listening. Powerful episode.