

Voiceover: Bulletproof Radio: A state of high performance.

Dave: You're listening to Bulletproof Radio with Dave Asprey. Today's cool fact of the day is that next to bone marrow, your hair is the fastest-growing tissue in your entire body, and it can grow just about anywhere except for the palms of your hands, the soles of your feet, and on your lips and mucous membranes, although I'm sure with enough bio-hacking there's probably some weird person out there working right now on how to get hair to grow out of your mucous membranes; just give them enough time. By the way, that's not a bio-hack I'm planning to experiment with anytime soon.

If you like today's episode, or any of the other 400+ episodes, I would be hugely grateful if you would take a second to go to iTunes, where you probably are right now, and leave a five star rating. It makes a huge difference for helping people find Bulletproof Radio, and just know that this show's out there as a resource. And you should also know that you can get the podcast transcripts on the Bulletproof website for free, so if you don't want to take notes on this episode or any other episode, you can just go get all the good stuff, and you can get all the links and everything else.

Today's guest is Roland Peralta. He's an entrepreneur who survived cancer and spent almost 30 years building different kinds of companies, and really a lot in the healthcare space, but what's most interesting and the reason I have him on the show is that he's focused a lot on something that I'm concerned about, something that almost everyone I know is concerned about, and it's hair loss. In Roland's case, for about 15 years after he got thyroid cancer and Rheumatoid Arthritis, something that I also used to have, I used to have Rheumatoid Arthritis, his hair started to go away. And he was like, "All right, this is something that's hackable." So he went out and tried just about everything out there, got some limited results, looked for why it's happening, the different pathways for it, and hired a team of researchers and did what entrepreneurs do and go out and disrupt things. So he's found some things that are clinically shown to work for hair loss.

I wanted to interview him today on Bulletproof Radio so I could figure out how to avoid hair loss. Just for the record, if you're watching on YouTube ... by the way, bulletproof.com/youtube will take you directly to the page for this. I'm 44, I have pretty legit hair, it's relatively thick, you can look at that. It's got a little bit of gray in there. My mom was entirely silver-haired at 24, and that's a genetic thing, it runs in the family. But my dad, my grandfather, all my aunts and uncles on both sides are like cue balls. So something I'm doing seems to be working to keep my hair. I got a little bit of the forehead going on, but for 44, I'm pretty darn happy. My hair is thick and full, but I do an awful lot of stuff.

That said, I'm still concerned, and since I'm going to live to at least 180, well, I'd like to have hair when I'm that old. So that's why Roland's on the show. I'm going to learn what to do about my hair, you're going to learn what to do about your hair. This is not just for men, though, because a lot of women, if you look on the Bulletproof forums, look on Facebook, a lot of women are dealing with this. And especially around perimenopause

or around pregnancy, hormones change and hair gets thin and brittle and starts to fall out, and it can kind of freak you out. There's all kinds of causes. We're going to dig deep on that in this episode. It's going to be a lot of fun. So, Roland, welcome to the show.

Roland: Thank you Dave, such a pleasure to be here. I wanted to say that recently I was traveling through Sweden and I had the pleasure of listening to your Wim Hof podcast, and that inspired me to actually take a workshop when he passed through New York a few weeks ago. So thanks for pointing me in that direction. That was an amazing experience.

Dave: Oh, that's so cool. The Wim Hof episode was one of my favorites to record. Wim's such a dynamo of a guy, and if you're listening and you don't know Wim Hof, he's also known as the Ice Man. And you should listen to that episode, I don't remember the episode number, but Bulletproof Radio. Wim, W-I-M, H-O-F, you can listen to that. And if you get a chance to go to one of his workshops, they're super legit. So you had a good time doing cold water plunges and breathing-

Roland: Cold water, and the holotropic breathing was incredible. I actually was trying to tie back the breathing technique to improving hair health, and there's definitely a connection because Wim focuses on stimulating the mitochondria through his breath technique, and that's one of the things that we're going to talk about today with respect to hair loss and why it's so prevalent globally.

Dave: That's super cool, because I mention Wim in Headstrong, my recent book about mitochondria, and if you're listening to this and you haven't heard, Headstrong just hit The New York Times science bestsellers list. And this is super unusual. It was between Homo Deuce and Sapiens and with The Undoing Project and some just amazing names that just completely blew me away, because normally authors like me and Tim Ferriss and just lots of other health authors, we generally hit the advice and how-to and maybe the business section, but I was not expecting to be listed as a bestselling science book. But it's because mitochondria are so scientific, and there's a direct connection with hair. You probably know more about that than I do, because I didn't go into hair in the book, but there's blood flow and things like that that breathing does. Before we get into the breathing stuff around hair and mitochondria, talk to me about what's going on in hair loss. Most of us think, if I'm losing my hair, I'm screwed because of genetics. Is that the case?

Roland: Right. No, it's actually not the case. And that's part of the myth that we as a company have been trying to bust, and I think that removes hope from the table from a lot of people, both men and women. Basically the medical community has been painting this gloomy picture that genes control the hair growth cycle, and if you've been handed the wrong set of genes, you're screwed. And we understand epigenetics as confirm that that's not in fact the case. So here's what I think, here's what we think as a company, here's what's happening: We know that there have been no developments in the pharmaceutical sector in last 35-40 years. Rogaine, Minoxidil, was the last FDA-approved product to enter the market, and prior to that, it was Propecia, Finasteride, which is a DHT-blocker. It simply blocks the enzyme that is responsible for converting testosterone to DHT. And DHT is the hormone that is actually implicated in androgenic

alopecia. It simply miniaturizes the follicles, shrinks them to the point where they become vellus hairs, and then you're inevitably bald.

So what we know is that the pharmas have been focusing on monotargeting. Everyone's looking for that magic bullet; everyone's looking for a single pathway, a single molecule, that they think will simply turn hair loss off and turn hair growth back on. And so what we know, through our research, is that that's the reason why nothing has been developed in the last 35-40 years. Everyone's been looking in the wrong direction. What we know today is that hair loss is multifactorial. It's not just the DHT hormone. So when Propecia targets DHT, it fails to take into consideration all the downstream pro-inflammatory cytokines that are created as a result of that hormone. One of them, for example, would be TNF-alpha. That's the cytokine that actually attacks healthy tissue, that-

Dave: Let's pause for a second there, because I think some people might not know what inflammatory cytokines are and all. So we talk about the genetic component of what's going on here. The way to think about that is that your genes are the physical instructions for how to build the building, the hardware in your body, but your mitochondria have their own set of genes how to build the power plant and the wiring inside the building. So you can have one building that's an office, one building that's a manufacturing facility. They all have the same walls, they have the same genes, but the inside does different things. And the mitochondrial DNA is different, and it's the mitochondria that are driving this whole epigenetic thing you mentioned. Epigenetics is, "Oh, look at this, the environment turns the genes on or off." So your physical hardware will change based on the environment, and the thing that does it is the mitochondria. They'll make more or less energy, they'll do all these things, and what you're saying here is that Big Pharma is always looking for the one thing. And unfortunately, when you find one thing, unfortunately, that one thing does many different things in the body.

So the hair loss products you talked about, the reason that I don't use Finasteride, is that Finasteride is, in a meaningful percentage of guys, it basically turns off all androgen production. It chemically neuters you. And there are support groups for people out there who have been severely hormonally damaged because they were worried about hair loss. That's kind of scary. And that's not to say the drugs don't work; most anti-aging guys like doctors, I should say guys and women, anti-aging physicians I work with, most of them for clients who are worried about this are still willing to prescribe those drugs. And they have a place, but they have systemic effects that are different than what you're talking about. So that's kind of the translation of the science there. And then let's get into this inflammatory thing. So DHT, this hormone metabolite, it causes some inflammation. And you were saying it was [crosstalk 00:10:00] to the cytokines?

Roland: Correct. So Propecia, or Finasteride ... Let's focus on Finasteride because that's the generic term. That only focuses on blocking the enzyme, but what it doesn't do is it doesn't clean up the mess, the inflammation, if you will. And what we know is that inflammation is actually responsible, inflammation plays a role in dysregulating the signaling molecules that are actually controlling the hair growth cycle. So in the presence of an inflammation begets inflammation. So once the inflammation begins, there's an inflammatory cascade, there's an inappropriate inflammatory response that's

chronic that leads to a dysregulation of signaling that actually controls the hair growth cycle: the cycle of rest, which is telogen; anagen, which is growth; catagen, which is essentially death; and exogen. So for any product to be effective, it has to take into consideration all of the factors, all of the factors that play a role in dysregulating the hair growth cycle.

So the hair follicle is very, very sensitive. It's a mini-organ; it requires a tremendous amount of power. The hair follicle function is directly dependent upon mitochondrial activity, so without that power supply, you can have all the moving parts, you can have all the protein, all the nutrients you need, but you're never going to manufacture hair if you don't have the power behind that machinery to get those engines running. So some of those triggers we look at are stress hormones. And just to give you an idea, when we started the company, we chose ingredients that were able to target many of these triggers, ingredients that had clinical evidence of efficacy at very specific dosages. We've partnered with some very interesting R & D companies that were using biotech to extract some of these phytoactives that proved to be effective in targeting some of these triggers.

So here are some of the triggers that are ignored by the pharmas and by all products on the market: stress hormones, toxins that are accumulating in the liver, estrogen dominance, androgens, which we just talked about, the DHT hormone, micronutrient deficiencies, we have inflammation, which we just talked about, and finally free radicals, oxidative stress, ROS. So those are the triggers that ultimately dysregulate the signaling that controls the hair growth cycle. All of those factors are actually downregulating the hormones that modulate mitochondrial activity. Those hormones are T3, which is the thyroid hormone; progesterone, which is another. Two hormones that are essentially powerful regulators of mitochondrial activity. Without a sufficient supply of that fuel, the mitochondria will not be activated; that power supply is not going to be sufficient. And as you said, hair follicle, second to bone marrow, has the fastest turnover. And that turnover requires a tremendous amount of power. So we need to address those triggers, we need to remove those triggers, in order to create an optimal state for follicles to actually function.

Dave: I think that's a huge list.

Roland: It is.

Dave: If I'm listening to this going, "God, I don't want to lose my hair, but there's like 14 things," if I'm counting right. So let's break that down into individual things. What you're saying is all of these are controlling inflammation to some extent or another, and there's different pathways. And it's funny, because you were dealing with Rheumatoid Arthritis, and this is what happens, this is also why I wrote Headstrong. Inflammation is always caused by mitochondria, and anything you can do at any level to turn down inflammation makes everything better, including hair growth, including Rheumatoid Arthritis, including cell signaling and all that. So it's kind of cool; by hacking your hair loss in the way you were talking about, you can have systemic effects that are anti-inflammatory. So your skin might look better too, or your liver might be happier, et cetera, et cetera. All right, so let's start, maybe, with thyroid problems. And this affects

women I think maybe at least as much as men. In fact, women get more Hashimoto's than men, but it seems like hair loss from the thyroid is a bigger problem for women, but some guys get it as well. What's going on there?

Roland: Yeah, very big problem. So we know that at the top of our list are stress hormones. We live in a society today where the fight-or-flight response is in constant flux. We're constantly activating the fight-or-flight response, and as a consequence, the stress response is being taxed. So we're overproducing cortisol, and what we know is that cortisol actually inhibits thyroid-stimulating hormone, which of course then inhibits the production of T4, which then inhibits T3. T3 then becomes an inactive form of the thyroid hormone RT3, Reverse T3. As you know, right? Go ahead. I'm sorry, Dave.

Dave: No, let's pause and translate that for people who don't know what T4 and T3 are. And it's funny, because what you just described, the pathway, I have a slide like that that I use. I think I used it on Tony Robbins's stage. But it's exactly right. And so what's happening, just if you're listening in your car and you're not a thyroid expert or you haven't heard some of the podcast interviews about thyroid, just so the grounder information is there, is that your thyroid, when it's working right, it gets a signal from the pituitary gland, something called TSH. And it tells the thyroid to make thyroid hormone, and it makes T4. And T4 doesn't do anything until it's converted to T3, which makes your mitochondria make energy, causes you to grow hair, makes you warm, and does all the things thyroid's supposed to do. And unfortunately, if you're stressed all the time, you won't get enough T4, and instead of making T3, which is the good stuff, you make Reverse T3, which is inactive. So if you're tweaking all the time because you're worried about relationships or because of whatever stressors, what you're saying here, Roland, is basically that your hair can start to fall out because you stopped making enough energy because you hijacked that T3 creation and made it the Reverse T3 that's biologically useless, if not harmful.

Roland: Exactly, exactly. So with regards to hijacking, there's another pathway with elevated cortisol, and that is the liver. Elevated cortisol causes the liver to produce higher levels of TBG, Thyroid Binding Globulin, and just as the name implies, the Free Thyroid Hormone is essentially bound and taken out of circulation, and as a consequence it now leads to inhibition of T3, higher levels of RT3. That leads to a progesterone downregulation, which then leads to estrogen dominance. So I'm going to draw an amazing circle for you by the time we're done. You may get a little dizzy, but we're going to paint a very clear picture for you. Dave, just to understand, we know that thyroid hormones play a major role in moving stem cells out of their niche, the hair follicle bulge. There's a reservoir of stem cells that are contained in the hair bulge. We need thyroid hormones signaling for those to be activated to move from the bulge to become new follicles. So when you're compromising T3 and progesterone as an example, you're effectively compromising new follicle production. So everything we do, any solution that you introduce, has to address the root trigger. So in this case we're talking about elevated stress hormones.

How do you lower elevated stress hormones? There are no pharmaceuticals in the market. We use a standardized ashwagandha. It's the only ashwagandha standardized from root and leaf that is standardized to 10% with thianalydes. That was clinically

proven to lower elevated cortisol significantly within a two-month period of time at a very low dose. So we reverse engineered a solution to the problem. So elevated cortisol is a major, it's a silent killer, really. It's probably the reason why I developed cancer in 2000. I lost my thyroid to cancer. So I take Levothyroxine and that is my source of T4, my daily source of T4. So managing stress levels is a very, very important strategy in hair loss prevention.

Dave: So managing stress, you can tell with meditation, heart rate variability, improving sleep, all these sorts of things. But sometimes people have a dysregulated cortisol rhythm, where, "Oh, my cortisol goes up at night when I'm supposed to be sleeping, and it's down in the morning." And if you suppress cortisol ... How does someone listening know if they have too much cortisol or if they have cortisol at the wrong time? Or they may even have too low cortisol? What happens if you have low cortisol and you take this ashwagandha extract?

Roland: Sure. So ashwagandha is a stress adaptagen, and it's a very smart plant. It brings the body back to homeostasis. It's actually used, as well, in the event of adrenal fatigue where you're not producing enough cortisol. And when you're not producing enough cortisol, you're going to end up being exhausted, you're going to get sick more often. So ashwagandha plays a major role in bringing homeostasis back to the adrenals. So it's a very intelligent plant. If you're overproducing, helps bring it back to balance.

Dave: It'll normalize.

Roland: Yeah.

Dave: And one of the ways I described adaptagens, and this is one of the most popular adaptagens, is that if you look at throttle response in a car ... In a race car, I just got to drive a McLaren last week on a test drive, which was kind of cool. No, I'm not going to buy a McLaren, I was just at the event, and I pretended like I was going to so I could drive one. But they put it in track mode, and you touch the accelerator and it lurches forward, and you let off the accelerator and it slows down, and it's like your foot's just glued to the accelerator and there's no delay. And that's what it's like when you're on an adaptagen with your stress response. And when you drive a normal thing like a Toyota Prius, I used to have one of those too, you press the accelerator and three seconds later it's like, "Rnnnghh," and it kind of moves forward a little bit. There's no power there and there's a disconnect between when you press the accelerator and when something happens. So in your body, if you can tighten the stress response so that the stress hormones can go up when you need them and go down when you don't need them, that will normalize things, and that's kind of the picture I have in my head of what ashwagandha does.

Roland: Exactly, exactly. We love it. It's one of our favorite ingredients in Nutrafol, because we know that stress is a major endocrine disruptor, and that's the first place you start is how do I bring my adrenals back to normalization. And we've seen remarkable results on Nutrafol, and we know that that's one of our star ingredients in the product.

Dave: I should mention, just because I haven't yet, Nutrafol is the hair loss stuff that you make that it uses all the stuff, so that's why you're an expert. This is the stuff that you made for your own hair loss.

Roland: Exactly, exactly.

Dave: All right, so you've got ashwagandha in there because you're dealing with the cortisol cause of this. So for people listening, if you're not using any supplements at all, lowering stress through the normal stress reduction techniques, there's a bunch in Headstrong, a bunch in Bulletproof Diet, a bunch of episodes on that. Meditate, sit in a cave, stop eating foods that cause inflammation; all sorts of things. But lowering stress is a great strategy for keeping your hair, and if your hair is falling out like crazy and you're in a bad relationship and you hate your boss, well, there you go, right? So what's another thing?

Roland: So elevated cortisol also is a potent trigger of inflammation; and again, since inflammation begets inflammation, you now have activated that chronic, inappropriate inflammatory response that leads to further dysregulation of the hair growth cycle. So you have multiple pathways that are being activated, or de-activating stem cell differentiation, essentially compromising healthy optimal hair growth cycling caused by the consequences of elevated cortisol. So it's a very, very important target to address when you're developing a hair loss strategy, and that was a big part of what we did as a company. The next item on our list was toxins.

Dave: Toxins, right. Define "toxins" the way you talk about it. A lot of people throw the word around. It's really matters, so get down on that one. What is it?

Roland: Sure. So I'm talking about heavy metals, we're talking about used hormones, mutated hormones, excess hormones that compromise liver productivity. We're talking about xenoestrogens; faux estrogens that are from the environment, from food supply, from products that we use daily. Those toxins compromise liver function and what we know is that the thyroid hormone, the beauty hormone T3, is actually produced in the liver. So for T4 to be converted to the active form of T3, we need a good, clean, healthy liver. So those toxins compromise the actual sufficient production of T3. What happens in the case of heavy metals? We know that mercury binds to selenium. Selenium is one of the ingredients in Nutrafol. I'm only talking about ingredients, about consequences that I know that some of the ingredients that we are using address.

So we know that selenium binds to mercury, and mercury is very toxic and contributes to mitochondrial dysfunction. Basically, it's evil. Mitochondria hates mercury. It causes decay, as you know, it increases ROS, it's a real problem. So evolution designed us so that the body doesn't care about hair. Hair is secondary to everything. Evolution says the organs come first, we got to protect the organs. Selenium, unfortunately, plays a major role in converting T4 to T3. So if the body has to choose, "Do I focus on removing the mercury from the body with the limited selenium that I have?" Because selenium is deficient in soil, it's no longer abundant in food supply. "Or do I allocate my limited selenium reserve to converting T4 to T3?" So if you have a toxic liver, obviously the body chooses for you. It's going to choose to chelate the heavy metals and ignore the conversion to the beauty hormone. That's hair loss, that's thinning, that's compromised

hair quality. All of that that's happening on the back end of the human body is compromising hair quality and hair production. So that's selenium, a very, very important mineral in the equation.

Dave: One of the places that you can get selenium is by eating Brazil nuts, and I am not a fan of Brazil nuts for a variety of reasons. They're almost always moldy, they're a very high mold crop, and you can usually smell it in Brazil nuts. So you can eat one and be like, "Why do I have a blood sugar crash two hours later?" It's because your mitochondria are trying to deal with all those toxins instead of benefiting from the selenium. They're asking for extra sugar so they can mobilize and oxidize and excrete those things, and then you have to pee, and you wonder, "Why is my Brazil nut not making me happy?"

The other thing is Brazil nut trees have super deep roots that go really, really deep, which can be a good thing. You want that in your cacao trees. But in this case, what they tend to do is they tend to take up radioactive elements from the soil. So I don't find a Brazil nut or two a day to be a sustainable strategy. If you can get really good, clean, fresh ones that are refrigerated, maybe; but you just don't know what you're getting with food sources of minerals, and a lot of foods that say they have minerals in them don't. They had minerals 25 or 50 or 70 years ago when they measured it, but the soil is different now. So I tend to look at selenium as a supplementation strategy. Are you using selenomethionine, the selenium bound to an amino acid?

Roland: Yes, exactly, exactly. So we know that liver toxicity, it's important that that's one of the things that we include in some of the testing that we encourage our clients to do. You should be testing for selenium, you should be doing the 24-hour cortisol test. We're using ZRT labs, we love ZRT labs, to do a lot of this testing. What we know is that, back to liver toxicity, glutathione is the mother of all anti-oxidants, and glutathione plays a major role in detoxifying the liver. We have multiple ingredients in Nutrafol that actually boost, naturally boost, glutathione production in the body, and that's curcumin, ashwagandha, and kelp. Kelp is obviously a rich source of iodine, and iodine has the ability to increase the body's production of glutathione. So those ingredients aid in detoxifying the liver. Very, very important.

Dave: That's a good healthy stack, and I got to do a quick plug here: You can also take Glutathione Force, our liposomal capsules. They don't taste like clove frosting anymore; no syringes, because we finally found a stable way to get it into a capsule. So that's a direct glutathione support. I do that, and we also do an iodine supplement that you can take directly, which is something that I would recommend with a kelp source. In fact, it is kelp-based. So those are Bulletproof supplements that are not designed for hair loss, but support these same pathways.

Roland: Exactly, exactly. Very good. Where were we, Dave?

Dave: We were talking about toxins and making the liver work by increasing glutathione.

Roland: Oh, yes.

Dave: Okay, so you got your glutathione levels up because you've included some ingredients that do that in Nutrafol. So step one: drop cortisol, step two: increase detox. Should we talk about androgens or estrogens next?

Roland: Let's talk about androgens.

Dave: All right. Androgens, the so-called male hormones.

Roland: Right. So we know that, obviously, as I said earlier, Finasteride targets the androgen hormone DHT, but there are very serious consequences to using Finasteride as a DHT inhibitor, and that is sexual dysfunction is one of them. My business partner, who's a model in his late 20s, was working as a model to put himself through engineering school, suffered in silence for eight years. He suffered silently from sexual dysfunction from using Finasteride to keep his hair. He had to choose between not getting laid or getting laid off, and he was another ... Millions of men are taking this drug, and there are class-action lawsuits in the European Union. In Canada, I believe, there are class-action lawsuits against the maker of Propecia.

Dave: Canadians are so polite, they almost never sue. It's amazing. They say they're sorry. It's amazing.

Roland: Sorry. And that's actually how he and I connected. He reached out and he said, "I have a confession. I'm having serious side effects from a DHT inhibitor that I'm taking." So we reverse-engineered the mechanism of action. Well, what does Finasteride do? It blocks DHT. We identified a nutraceutical grade saw palmetto which has the ability to not only block the conversion of testosterone to DHT, but it actually binds to the receptors that DHT would normally attach itself to. So Propecia doesn't do that. Finasteride can't attach itself to the receptors; it simply blocks the enzyme. So the beauty of saw palmetto, which is one of the ingredients in our product, is that it actually increases nitric oxide, which improves vasodilation. It was used in traditional medicine as an aphrodisiac. It works against inflammation, it lowers CRP, C-Reactive Protein, which is a marker for inflammation. That's basically the beauty of displacing pharmaceuticals with naturals. Once you understand the mechanism of action, you can identify botanicals, naturals, that are capable of doing what pharmas do. I was listening to one of your podcasts when I was in Sweden, as I was telling you. Dr. Mercola came onboard and was talking about Metformin and berberine. And that inspired me to do some research, and sure enough, my mother, whose insulin was out of control, they were about to put her on a pharma, I put her on berberine and she's doing so much better. Anyway, so that's an example of-

Dave: Nice.

Roland: Right? Of using-

Dave: Get her on Bulletproof coffee and you won't even recognize her. It's incredible what getting brain octane in there as an alternate energy source. Because when you have Type 2 Diabetes, you just aren't using sugar effectively, and your cells are starving for

energy, you get the energy from fat and it's like a whole 'nother thing. Just put brain octane in her cereal. It doesn't matter. Just see what happens; it's incredible.

Roland: I'm on it. I'm her doctor. She loves my health tips. So we were discussing androgens, but we also know this year there was a study released ... And this is why Finasteride is an archaic way of treating hair loss, because again, it ignores so many of the consequences of DHT. What we learned this year is that the DHT hormone actually downregulates the signaling that controls the hair growth cycle. So not only are you miniaturizing follicles, but DHT hormone is actually downregulating the signaling that's controlling the hair growth cycle. So Propecia, or rather Finasteride, can't quite act on that pathway. We were talking about estrogen dominance was the next bucket, right?

Dave: Right.

Roland: And that's a major problem in the world today. I'm sure you've talked about it on the show.

Dave: Not just talked about it. When I weighed 300 pounds, I had way more estrogen than my mom, and way less testosterone too. I really did; it was kind of embarrassing. And all the guys in my family-

Roland: What size bra were you wearing?

Dave: Well, that's the problem. All the guys in my family have man-boobs, every one of them, and even to this day, you give me any pregnenolone or DHEA which are common anti-aging hormones, you give me those, I grow boobs. And my body aromatizes ... I swear, there are women who probably wish they had estrogen processing like I do. And I don't believe that's terribly environmental, given all the stuff I do. And I supplement my testosterone, and I block its conversion, but it's been a constant challenge. I think that is somewhat genetic. There's an epigenetic component. But to this day, if I do the wrong things, within two weeks I can have man-boobs, and if I walk into a moldy building, systemic inflammation happens and I'll have man-boobs the next day. That's not estrogen, although there are synthetic estrogens in toxic mold; that's just direct inflammation. So if you see me walking around looking like I need to be wearing a bra, it's probably because I ate the wrong thing or something. Anyway, full disclosure: We've talked about my man-boobs on Bulletproof Radio. That's what estrogen does for you. It sucks.

Roland: But it also ... Here's what we've learned. So we have a number of ingredients in Nutrafol that help lower estrogen dominance, and we know that a very recent study confirmed that estrogen in excess acts as a braking mechanism to the hair growth schedule. It actually shortens the anagen phase, which-

Dave: What about for women? This has got to be a problem, because women with thinning hair have a similar situation. They just have more estrogen. They have less of a DHT problem, though.

Roland: We believe that female pattern baldness, or women who are thinning, showing early thinning, are estrogen-dominant.

Dave: Exactly.

Roland: Yeah. If they're estrogen-dominant, it's because they're not producing enough progesterone, right?

Dave: Yes.

Roland: So A, they're not clearing the estrogen out of their liver fast enough, because the liver has to eliminate. It neutralizes and eliminates all of that excess estrogen. If the liver is sluggish and it's not prime, you have a problem. Those hormones are going to get recycled back into the body. So elevated cortisol leads to estrogen dominance. Iodine deficiency leads to estrogen dominance. Those are two major culprits at the root of ... Estrogen dominance, as you know, is implicated in breast cancer and ovarian cancer. It's a problem, and it's one of those things that women should be testing for: Am I accumulating more estrogen than I should be in my body? Am I eliminating it fast enough? Is it because my progesterone is compromised because I have a higher RT3 ratio to my T3? Where's the trigger? Is it because I have an iodine deficiency? Once you identify that pathway, you're able to maybe address it. So kelp is a terrific source of iodine, it's a terrific chelator, it's a natural chelator, it chelates excess estrogens, it chelates faux estrogens that accumulate in the liver. That's something that everyone should be testing for. Iodine testing should be mandatory in society today. I think you agree with that.

Dave: It's one of the largest causes for drop in IQ globally is a lack of iodine. You want to have kids who have the IQ they're capable of, you better be getting enough iodine. And it's kind of funny, because I tell people to use Himalayan salt. Most people are getting their iodine from iodized salt, which is full of other crap. So if you're doing Himalayan salt the way I recommend, you need to be on an iodine supplement, and there's various ways to get it. It's in Nutrafol, you can buy the iodine supplements that I make, you can also paint iodine on your skin and it'll absorb pretty well that way. But the bottom line is you do need iodine to perform well, and there's some people out there who are recommending, this guy called Brownstein recommends 15 milligrams a day, relatively high doses. But 150 micrograms would be kind of the minimum, and I tend to take about three of those kind of pills a day.

Roland: Right. And I think the problem is so severe that if you are highly deficient and you're only ingesting 150 micrograms a day, you're not serving your-

Dave: It's not enough.

Roland: Yeah, it's not. So we have a responsibility to look at iodine sufficiency. We know that because estrogen dominance is such a problem in society today, we need to ... Curcumin is an anti-estrogenic. We use BCM-95 in Nutrafol as well. Iodine is an anti-estrogenic. We source our kelp from the northern parts of Iceland in an area that the

government declared off-limits to ships, so it's considered organic because it's a sustainably harvested kelp from the cleanest waters in the world. So anti-estrogenic protocols are highly important to-

Dave: For men and women, you're saying.

Roland: Both, yeah. Exactly. Just for overall health, because we say that the old expression, "Outer beauty is a reflection of inner wellness," it is so true. Hair is simply a reflection of how you're doing. It's almost your report card. If your hair is thinning, if your hair is falling out, something is off. And that requires a better look. And part of the problem with Western medicine today, Dave, as you know, is that hair is secondary. Western medicine is reactive. It's not proactive. We're not proactively looking for reasons why you may be thinning. The rule is that if you are thinning, you typically lose 50% of your hair before you even notice that it's thinned. Because you have so much hair on your scalp, you have to lose a lot of it before you even know that it has thinned. Scary numbers.

Dave: Yeah, it's pretty scary, and no one wants to deal with thinning hair. You see it in the drain, like, "Yikes." I've gone through cycles, historically. There's times when I've been really unhealthy, where you're like, "Wow." You can grab a handful of hair and it falls out. But then the next month it seems like it's completely fine. What's going on with that?

Roland: That could be stress-related. Typically you lose 100 to 200 hairs a day. So the media says, "It's normal to lose 100 to 200 hairs a day." But it's not normal not to regrow 100 to 200 hairs a day. And so that statistic, everyone thinks it's normal to lose 100 hairs a day. Two years later, you're thin. You've lost 50% of your hair. How did that happen? So stress triggers a sudden shedding, shocks the hair follicles. It's called telogen effluvium, where there's a sudden loss of hair. You could have lots of clumps of hair falling out. Most people recover from that. We always recommend Nutrafol because it has powerful stress adaptagens to help bring you back to homeostasis. But yeah, I'm sorry, Dave. You were saying?

Dave: I'm still thinking about the estrogen thing. One thing that I didn't mention, we make a supplement called calcium-D glucarate that I take specifically to help the liver get rid of extra estrogen. And this is something that also deals with other toxins different than the glutathione pathway. So I got to say, part of my own strategy for just detox in general is calcium-d glucarate. And we just launched that, because it's an almost unknown supplement, but it's a very powerful one that would work very well for what we're talking about. All right, so we talked about the different stress things, why you would have either clumps of hair or just times when a lot more hair falls out than others. Let's talk about some of the lifestyle things. What about sunlight? Good or bad?

Roland: Both, because the hair follicle has vitamin D receptors. And this is so interesting that people underestimate ... I think that physicians downplay the importance of vitamin D. So if you're vitamin D deficient, there's a range. There's a low range, the lower end of normal, and the higher end of normal. That range is so vast and everyone is so unique. With respect to hair follicles, you need to have sufficient vitamin D. Vitamin D plays a

major role in signaling the molecules that control the hair growth cycle. So vitamin D almost acts as an activator, if you will. And I know that vitamin D plays a role in mitochondrial activation as well. So you need sun, of course, but not too much sun, because sun produces higher degrees of free radicals, which leads to oxidative stress, which leads to inflammation. Inflammation, we know, begets inflammation. It dysregulates the hair growth cycle. So we use vitamin D in Nutrafol as well; that's part of the entire formulation. So very, very important, getting some sun; but not overdoing it, for fear of excess free radicals and oxidative stress.

Dave: Got it. What about hair gel, hairspray, hair dye, all that kind of stuff? What's that going to do?

Roland: Yeah, that's another potent trigger of inflammation. A lot of these products that are used for styling are definitely implicated in increasing free radical production. So you want to try to stay away from sodium, SLS is a great example. That's clinically proven to irritate the skin. Why would you use a shampoo on your hair if it's going to irritate your skin? And that irritation triggers a reaction. It's a free radical oxidative stress inflammatory response. So yeah; a lot of these products, you want to be careful not to cover your scalp. Some people who use hair gels, suddenly they're smearing gels on their scalp and they're basically suffocating the follicle. Follicle needs a little air. So yeah, we recommend trying to use natural products that don't have known irritants in them. Stay away from the products with the parabens, et cetera.

Dave: That seems like really, really good advice, just to not put crap on your hair. The general rule that started with my very first book called The Better Baby Book, and that I've reiterated in Bulletproof Diet, and most recently Headstrong, it's if you wouldn't put it in your mouth, don't put it on your skin; and that goes for your scalp as well, and that seems to work really well. So we're coming up on the end of the interview, but I've got to ask you, even though it's not your main focus here: All right, my mom, gray at early 20s, right? And I've had a little bit of gray since I was 30, and I have just a little ... I don't know, what's Storm, the X-Men character ... I got a little bit of that thing going on. But I'm 44. I know a lot of anti-aging doctors dye their own hair. That's the biggest thing you can do. I'm not dyeing my hair. Maybe I will someday because who knows, but I actually value feeling young; most importantly, having youth energy and living to 180. But I also would like to look like I'm 44, not 144, at some point in my life. So I'm not vain, but I also know that how you look helps with how you feel. So what's up with the gray hair thing?

Roland: Right, so I'm happy you asked. I love sharing this one. So gray hair is nothing less than a reflection of a reduction of catalase enzyme, one of the more potent antioxidants. A by-product of metabolic process is that you produce hydrogen peroxide. Catalase is charged with the responsibility of breaking down H₂O₂ into H₂O and O₂. So as we get older, as we age, our antioxidant levels begin to drop. So we need to use antioxidants like ashwagandha, curcumin, saw palmetto, tocotrienols, those are ingredients in Nutrafol, all increase catalase enzyme. So the anti-aging strategy is boost your catalase enzyme production. That's really it. That was a study done at a university in the UK about two years ago where they conclusively proved that H₂O₂ played a major role in essentially bleaching out the hair pigment centers.

Dave: Well, it's funny; if you want to bleach your hair, you put hydrogen peroxide in your hair to get the bleach blond look.

Roland: Right, that's exactly right.

Dave: That turns it more of a yellow color versus white. So, I've been familiar with the hydrogen peroxide thing for a while. I usually rinse my mouth with a mild hydrogen peroxide. I have for many years, and I've often wondered, is that a part of my gray? But my gray is less than it runs in my family, but what you could do is you could reduce hydrogen peroxide or you could increase catalase, and ideally doing both is a good strategy.

Roland: Exactly, exactly.

Dave: Awesome.

Roland: So hopefully 10 years we'll see you, you'll have a lot less gray.

Dave: I'm working on it. It wouldn't surprise me. I'm also doing stem cells and all this other crazy stuff, so when you see me next year, I should look like I'm maybe 35. I'm going to age backwards for a while. I do that every 10 years, age backwards 15 years. Good strategy? Benjamin Button, here we come.

Roland: You look great. You look great.

Dave: We're up on the end of the interview, which means I get to ask you the final Bulletproof question, and that is: If someone came to you tomorrow, and said, given everything you know, not just about hair, but everything in your life; and as a cancer survivor and successful entrepreneur, you'll have a different aspect on this, or a different perspective than a lot of people. Look, I want to perform better at everything I do as a human being. What are the three most important pieces of advice you have for me? What would you offer them?

Roland: Oh, I would say take a position. I love research. Read the research. If you have a health concern, and you see studies that imply "may," "could," "possibly," trust your intuition. Take a position. I did; it saved my life. I was told I was going to end up in a wheelchair from my Rheumatoid Arthritis based on the progression of that disease, and I fought the system, I did the research. I trusted a protocol at NIH that had been discovered around the time that I had been diagnosed; and I, against my doctor's orders, fired all my doctors. I took a position, and I said, "I believe in what I'm reading. I trust the research." And today I'm alive and well because I chose to fight; rather, I chose to trust my intuition. So trust your intuition. Take a position. There's always a fork in a road. Choose the fork that feels best and right for you. Did I answer that question?

Dave: That was one, take a position. You got two more. Three pieces of advice.

Roland: Trust your intuition. Really, it's research, research, research. Know thy body, learn everything that needs to be understood about the mechanisms of action. Once you understand mechanisms of action, you can proactively treat yourself and identify botanical natural solutions to counter some of the problems that you're dealing with. So I would say absolute research. Read less fiction and read more scientific literature.

Dave: All right, I like that one. Sounds like something I'd do.

Roland: Right, right.

Dave: All right, did we get three out of that? We had ...

Roland: I think there's three somewhere in there, but-

Dave: Intuition, research, and research, I think I counted. Awesome.

Roland: Yeah.

Dave: Now, let's see. You offered, at the beginning of the show before we started recording, you said that you were up for giving away a thousand bottles of Nutrafol just for Bulletproof Radio listeners, kind of as a gift, which I'm super cool with. So if people go to nutrafol.com/bulletproof, or use code `bulletproof` or something, the first thousand people before August 31st, 2017, you'll give them a free bottle for, I'm guessing, signing up.

Roland: As part of their membership, exactly.

Dave: Okay, so you sign up just to become a member, which is basically a monthly thing. So anyway, if you want to try it, I'm sure it's cancelable. I don't know all the details, it'll be on the website, you can go check that out. But it's a cool way to try Nutrafol and see if it's going to help you with hair thinning or hair loss, and this is something that a huge number of people ask me about, and something that I pay attention to, and I believe in the four-pronged approach that you're looking at here. Deal with stress, deal with toxins, deal with estrogen, and deal with androgens. Those are valid mechanisms of action through all the research that I've done, so it's a cool thing. So go to nutrafol.com/bulletproof, and you can get your free bottle if you're one of the first thousand, and if not, you'll do something else nice for them, I'm sure. But it's a gift for you, and that's kind of a cool deal.

Roland: Dave, if they are not able to get their free bottle, there's 350 doctors nationwide that carry our product. We have dermatologists and plastic surgeons all over the states. There's someone somewhere near you that will always have it on their shelf for your listeners to pick up on the fly. And yeah, thank you.

Dave: You're so welcome. If you enjoyed today's episode, you know what to do. You could just go out and do something nice for someone else and just make the world a better place, because hey, that's cool; that's why I do the show. You could also head on over to

Amazon and leave a review for Headstrong or The Bulletproof Diet. One of the easiest things you can do for an author like me is you can leave a positive four star review on Amazon. Or five star, six star; however many stars they have. But when you do that, I read all those reviews, and so do so many other people. It's one of the most impactful ways. You can take about 15 seconds of your time as opposed to the 2 or 3,000 hours that went into writing a book like that for me. So I would sure be grateful if you'd be willing to do that; and if not, share the show, share this episode, do something cool, and have a wonderful day. I'll see you on the next episode.