



Transcript – The Do’s and Don’ts of Light Hacking - #349



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Female: Bulletproof Radio, a state of high performance.

Dave: You're listening to Bulletproof Radio with Dave Asprey. If you're watching on YouTube, you might have noticed that I'm glowing a strange color, and I'll explain why in a minute. Today's cool fact of the day is that in physics, light refers to electromagnetic radiation, all of it. The light that you and I normally talk about in everyday life is the visible part of the spectrum. It's the part we can see. Other animals can see parts of the spectrum that most humans can't see. For example, a bunch of insects can see ultraviolet light. Those bug zappers that work so well that attract lights with ultraviolet, they work in part because bugs come to the UV light that's created by those black light things, which are ultraviolet wavelength.

The wavelength of infrared light is too long for your eye to be able to see, but you can feel that kind of electromagnetic radiation when you set in an infrared sauna. UV light is something that you can use to show things that your eye can't see, so it's really handy for things like forensic scientists or even people measuring the fundamental nature of who and what we are and how we work. For instance, if you're a bit of a bio-hacker, you might have heard of the P450 pathway in the liver. That's named because it fluoresces under light at that wavelength. Pretty cool, huh? In fact, your body, we're just discovering this, uses light to communicate between its cells and you respond in ways you wouldn't expect to light.

A quick question for all you hardworking entrepreneurs. Has dealing with your day-to-day paperwork ever brought about feelings that resemble anything close to joy, satisfaction, or ease? I didn't think so. If you're ready for that to change, my friends at Fresh Books are inviting you to try their ridiculously easy cloud accounting software that's a total joy to use and, yes, I just used the words easy, joy, and accounting in the same sentence. You can link your Fresh Books account to your credit and debit cards so next time you expense that business lunch or tank of gas, it'll show up automatically in your Fresh Books account.

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Today's podcast is actually one of those unusual podcasts where instead of interviewing an expert, I'm just going to share some information with you that's really, really helpful. The feedback I got on the last one of these was really, really helpful because people came to the Facebook page and just left comments. "I want to see more of these, Dave, where you're just educating us and talking about your experience versus more interviews." This time is here for you. I love doing these podcasts. I love interviewing people. I love learning new things, and I love sharing things with you.

Whatever is going to do the most good is what I'm here to do. Bulletproof Radio is at about 50 million downloads right now. That's incredibly, incredibly big, and that means if you look at the number of human lifetimes that are consumed in 50 million hours, it's dozens. In fact, Bulletproof, in total, is reaching about 10 million people a month. That's a big responsibility. I don't want to waste your time. If you like this episode, go to the Facebook page. This is the Dave Asprey page on Facebook, and say, "Hey, this is good" or "I don't like this" or just let me know. Tell me other things you want to do.

I'm really grateful if you just go there, click like, and leave something that says "Bulletproof Radio, thumbs up" or "Could you talk less? I want to hear more from guests." I will tune what I save for you because I really, really care and I listen. I actually go to Facebook every day. I actually read those posts. I respond to them and, yes, sometimes I have the Bulletproof team respond to questions I've already answered many times before, but usually what you see on there is actually me. Not a lot of people at this scale do that. I think it's really important for me to stay connected to you.

Anyway, this podcast is me sharing a lot of stuff for you, also. This is maybe a bit of a preview for some of the things that you are going to see when you go to the Bulletproof conference September 23rd through 25th in Pasadena, California. Go to BulletproofConference.com. There is still a few conference passes left. We may sell out again this year. We're expecting about 3,000 other really cool bio-hackers to show up. If you want to learn from the world's best people, you want to play with technology from nearly 100 vendors with stuff that I'm going to show you today, at least show you on video or tell you about if you're driving or listening to this at work when your boss thinks you're doing something else. Cool, multitasking.

That said, before we get going, I've got to show you something that is one of my great joys this year. You might have seen, if you're a long-time listener, the old, small jars of Bulletproof Ghee, limited edition. We only came out with it for a month or two. It was really, really hard to make this stuff, and the problem is that we created a global shortage of grass-fed butter. Bulletproof Coffee did that. That's amazing. One of the side effects of that and something that is in my ultimate vision for Bulletproof is that when we do this right, we change demand. There's always supply and demand.



If enough people like us demand grass-fed products instead of grain-fed, it stops farmers from making genetically modified corn, spraying pesticides and antibiotics like glyphosate or Roundup on soil that destroys soil. When you have cows that eat grass, then we have soil that produces grass and that's actually healthy soil. It makes healthy animals and makes healthy people. When you and I spend money on grass-fed products, we are making the world a better place and we are getting stronger ourselves. That matters so much to me and that's why I'm really stoked to be able to show you or just tell you about this new, much larger jar of 100% grass-fed ghee made by yours truly.

This is the new Bulletproof Ghee. We just came out with it. We now have a global supply chain set up to get you high-quality, grass-fed butter. What we do to make ghee is we take the butter and we clarify it, which means we remove all the water, remove the protein, and remove the milk-sugar. There's not that much protein in butter anyway, and the reason butter is better than cream or milk is that when you culture butter, the proteins get reduced and digested and modified so that you're getting something that doesn't bind to the good stuff that's in coffee. The problem is that if you're sensitive to even butter, which some people are, then ghee may very well work for you because ghee has almost all protein and all milk-sugar removed so if people are lactose-intolerant or who don't tolerate casein or whey can usually have ghee and they get to have the butter flavor and all the other good stuff like that.

Where do we get ghee? We get it from grass-fed cows as you would expect. We're using a source from New Zealand, which is really, really cool. We do this over an open flame, which isn't always done these days. We're following traditional Ayurvedic techniques for making ghee, which is really, really cool. You can use it in cooking and baking. If you use it in Bulletproof Coffee, what you do is you add a little bit of the Bulletproof upgraded collagen, and this is an enzymatic ally-digested collagen that's good for your skin, good for your complexion, and just good for building healthy tissues in the body.

Collagen is largely missing from our diets. You can also get a little bit of collagen from bone broth, but not enough. The collagen mixed with the ghee when you blend it into your coffee gives you a little bit more of that nice foam on top that is so delicious. If you listen to the show, you've probably had Bulletproof Coffee. If you haven't and you're listening, there's a reason I keep talking about it. Get some brain octane. Get some of the beans. The Mentalist is my new favorite. That's one of our new roasts that just came out.

Try the Bulletproof Coffee starter kit. Get some of our ghee or use grass-fed butter. Either one's okay. You will feel different the very first day you use it, but the reason you want to have ghee, even if you already use butter in your coffee, is that ghee has a very, very high smoke point. It's 485 degrees Fahrenheit. It is the single best cooking oil you will possibly find. I still recommend you don't heat it that high. You don't want to do that to your protein or to your vegetables. You don't want to burn them. You want to add a little bit of water when you're cooking with fat unless you're doing bacon or something, in which case, just turn it down. Cook it for longer at a lower temperature is better than a higher temperature for less time. You don't want to damage all the fats and proteins in your food.

Bulletproof Ghee has no milk solids so you don't get that crusty burning that happens if you

cook with say butter. You get the blackness on the bottom of your pan. You get the burned butter flavor. This has more like a caramel flavor. It's really strong butter. You put a little bit of ghee on a steak and it's like a religious experience. Let's see. Gluten-free, non-GMO, stuff like that is as you'd expect. If you roast things like meat, a little bit of ghee adds just an explosion of flavor. If you put it on salmon, it makes the salmon better. If you pretty much saute anything, you get the picture.

What I do in my kitchen is I put some ghee in when I'm cooking the vegetables. I put some water in there, too, and it percolates through everything. Then when I'm done cooking, I pour brain octane on top so you get both kinds of fat. Brain octane's good to 320 degrees Fahrenheit, which is plenty high enough for cooking. I just like to add that at the end instead of at the beginning because I'll use the most stable fat when I'm doing the cooking. You get the point. Bulletproof Ghee is new. It's awesome. It's grass-fed, and it was an enormous amount of work to get you a stable supply. It may sell out on occasion, but it is room-temperature stable, which means I can ship it to you anytime you want it. It means you can keep it in your desk drawer at work. You can keep it in the cabinet. You don't have to refrigerate it. Boom. That's awesome.

On to the show. We're going to talk about light hacking today. Light hacking is something that, frankly, I've been a little bit afraid to talk about. This is a healthy fear and not the unhealthy, sympathetic, dominant, fight or flight response. It's out of concern for your safety. Some of the most powerful things I have ever done are light-based interventions. We didn't use to know for sure how light did this stuff. We've known for about, let's see, since the late 90s that light changes mitochondrial function, but we didn't exactly know why because we didn't understand quantum biology.

Most of the really big improvements in quantum biology happened since 2013. I'm writing about a lot of the mitochondrial things in my new book that's coming out early next year so if you're not on the Bulletproof list, you need to get on the email list. Go to BulletproofExec.com, give me your email address, I'll send you some cool stuff, and I will notify you about the book. Subscribe to the Facebook page, click like, all that kind of stuff, and when the time comes, there'll be some special deals to get the book, but it's going to be at least as impactful as the Bulletproof Diet because of light, but here's why I'm afraid.

You can harm yourself. I have harmed myself with light. I have one of the very first brain-enhancing lights ever made. It was sold by a guy over Yahoo in the mid 90s. Because I'm a brain hacker, I have all of the weird toys. That \$300,000 that I spent, it's actually closer to almost a million dollars I've spent on upgrading myself now. I took this little light. The guy who invented it pulled it off the Internet because he changed his brand so profoundly that he ended up going to medical school, and there's almost nothing written about it, but I still have it. It was, for years, one of my most prized possessions because it turned my brain back on after a very serious toxic brain exposure from living in a moldy house.

When Daniel Amen, the famous brain scientist, who's been on Bulletproof Radio, who's a friend, when he saw my brain scan, my SPECT scan, he literally said, "Dave, your brain looked like someone who lived under a bridge using street drugs. It was a seriously toxic brain, one of the worse I've seen." Lights and oxidative therapy and mitochondrial enhancement brought me

back. Neurofeedback, The 40 Years of Zen program was a huge part of it, but here's the thing. Meditation, deep breathing, going to Tibet, none of that stuff works or neurofeedback. None of it works if your mitochondria aren't working and your mitochondria rely on light.

The reason I was a little bit scared about this is twofold. One, our esteemed cameraman, Brock, is going to be annoyed because I didn't tell him I was going to stand up and show my leg, but I am going to stand up and show my leg, so here. I'll show you a bio-hacking scar. If you're online, you're not going to be able to see that, but see that right there? What you're looking at is a scar that was shaped like Africa, and holy crap, it's actually healing. I just did stem cells intravenously and my scar is massively reduced. It's not as discolored as it used to be. Anyway, right here on my leg, I went to sleep with an infrared, non-heating light that wasn't supposed to be able to burn you.

It was a prototype. It was maybe unlicensed. I woke up with plasma soaking my sheets. I woke up in the morning. It never hurt. I never felt any pain, but I had second-degree burn that was within 1 millimeter of requiring skin grafts. It took about 6 weeks to heal. Infrared burns are very different than normal burns because infrared does interesting things to your cells. That's one injury, but that's not the one that scared me. The one that's made me a little bit hesitant to talk about this came from using this LED infrared device, the one I talked about from Yahoo. This thing, you're supposed to put on the front of your brain, the pre-frontal cortex or maybe on the back along the corpus callosum, and it stimulates blood flow. It stimulates mitochondria energy. It stimulates neurogenesis. It's really powerful.

One thing that's driven me nuts forever, and something I've hacked pretty effectively, is that my brain doesn't process audio the way your brain does unless you're a little bit unusual like me. Apparently, my brain stem doesn't filter sounds the way most people do. This may come because I used to be kind of on the Autism spectrum. I say kind of there. I was diagnosed formerly with ADD, but that was very late in life after I'd done a lot of bio-hacking. As a kid, I had OCD, ODD, and all of the symptoms of Asperger's Syndrome, which clearly runs in my family, including my grandmother, a Master's or PhD in Nuclear Engineering, who met my grandfather who is a PhD chemist on the Manhattan Project, so I have these crazy scientists in my family.

My grandmother actually went through and did a test of all of her kids and all but one are on the Asperger's Spectrum. I didn't use to make eye contact with people. My brain is very different now and light is one of the reasons. I don't process sounds the way you do. If I'm in a crowded bar, I have to use conscious sorting to sort out what someone's saying so it takes more energy for me than the average person. That means when someone speaks to me in French, or my wife is Swedish, she speaks five languages, including French, French and Swedish sound like someone making noises to me. I do not hear the individual sounds. I go to France. Someone says something to me in French. I try to say it back and they laugh at me because I say something else, so I'm like, "I'm going to hack this."

The language processing part of your brain is on the left side of your brain a little bit above your ear, a little bit forward from there, and I shined this light for two minutes, which is the most you're supposed to use it because any more than two minutes actually could harm your brain. Do you see how dangerous this is? This is like neurosurgery stuff. I did it there, and for the next

four to six hours, I spoke in garbled language. Literally, when I would speak, weird words would come out. Given that at the time I made my living as the head spokesman or basically head evangelist for technology companies, that mean I gave keynote presentations.

I was a teacher at the University of California. I ran a whole program on how to build the Internet as we know it today. It was called the Web and Internet Systems Engineering Certification Program. I created that program. I didn't want to not be able to speak because that would be bad so I was ... I think the technical term is I was shitting bricks for about six hours and that's one of the reasons that of all of the environmental changes you can make around you, I talk a lot about the Zen Tech Filter, which is something that we created at Bulletproof in order to put on your iPhone to reduce the harmful types of light, but I haven't been as aggressive about talking about these powerful, powerful interventions because I'm concerned that the more progressive and aggressive bio-hackers listening today could hurt themselves, so for God's sake, I'm sharing this knowledge, but please go slowly.

Do your research if you're going to do any of this kind of stuff. We know a lot more now than we did 15 years ago when I did this, but if I'd have held that on there for 4 minutes, not 2 minutes, I might not be sitting here in front of you. It's that serious, so listen it. That's enough of a warning here, but that's why I haven't shared as much as I know about. Before that, I've known crystal therapy people. People talk about color therapy, and I thought there's a little bit of BS involved. Over time, I became more and more convinced, wow, the color of light affects your brain in very noticeable ways.

It's not the hippy woo stuff at all. It's a very powerful hack that changes the brain and it turns out I'm not alone there. Here's why. We understand a lot more now than we used to. One thing is that light directly signals your mitochondria. They use it to talk to each other. It's not the only way they talk, but they do intercommunicate. The way that I look at the body now after having written my book on mitochondrial function. That's coming out. I'm so excited. Early next year. That'll be early next year. That's early 2017 since this is something that you may listen to next year. In 2017, my second, my third big book will come out. The first one was a Bullet ... Fourth book. I don't know.

Better Baby Book was number one on fertility and how the environment changes your pregnancy, what to do with that knowledge. Number two was a Bulletproof Diet. New York Times bestseller. Thank you. I'm still stoked on that. Number three was Bulletproof Cookbook. Number four is coming up here. I'll tell you guys the title early next year. It's cool, but these mitochondria, they're actually bacteria. They evolve from bacteria. We're symbionts, so we have this nucleus in our cell and we have all these bacteria. The average cell in your body has between 1 and 2,000 mitochondria floating around inside it making energy, reacting to the environment around you, including the light, including the type of food you eat, including the air that's surround you, including the pressure, including vibration, including sound, everything.

These are the environmental sensors. They change the amount of energy they make and they actually make the mother of all hormones, called pregnenolone. They're really important. They listen to light like nothing else. They also listen to ketones like nothing else, which is one of the reasons brain octane in Bulletproof Coffee is so damned powerful, and if you haven't tried brain

octane in your Bulletproof Coffee and you're using some kind of coconut oil thing, coconut oil simply doesn't work. In the university study that we're about to release, I can show you that coconut oil doesn't raise ketones more than fasting, but brain octane, way better, multiple times better than coconut oil and that's why it's different than MCT oil and it's different than coconut oil. It simply works better and it's because of mitochondria.

When you make those guys work better, they make less oxidative species. In other words, less of these reactive oxidants that cause inflammation and you have more energy, more electrons to run your life. Shining the right color of light on them makes you make more electrons. It's that straightforward. The way I'm looking at the body now is the mitochondria sense the world around you and they decide what genes get expressed from the nucleus. For the last, I don't know, since probably 1960, we've been looking at it's all about the genes. I have my entire human genome sequenced. It turns your mitochondria are calling the shots.

In your brain, in your eyes, and in your heart, you have 10,000 mitochondria per cell, 10,000. That's 5 times to 10 times more than you have everywhere else. If you could just move light to change them, it's going to change your life. Light therapy in my brain, along with ozone therapy, are what brought my brain back on line after mold exposure, chronic Lyme disease, people talking about fibromyalgia and chronic fatigue, all that kind of stuff, chronic musculoskeletal pain. It's all tied to mitochondria and mitochondria are tied to light and they're tied to temperature and they're tied to everything in the environment around you.

That's why light therapy is so important. The other evidence we have that light therapy really matters, one is called Irlen Syndrome. If you haven't listened to the podcast with Helen Irlen, she's an amazing woman. She's actually been up here and taught me how to diagnosed people with scoptic sensitivity, which is about 48% of the population. The Irlen Syndrome, these are people who some species of light mess with their brains and they have a much harder time reading so they use more energy to read. I'm one of those. Fluorescent lights and LED lights just tweak on my brain because of my mitochondria.

Helen figured out you get the right color and people who are dyslexic, even adults who don't know it, suddenly they can read and they don't want to fall asleep and I've personally diagnosed people. I'm certified as a practitioner and, oh my God, it's life changing. A lot of the Bulletproof employees have had their eyes done and they're like, "I got my brain back." There's Hollywood celebrities I know who have Irlen lenses and they put them on between scenes because they get their brain back. It's very hard to say this doesn't do anything. You can hack your vision. You can hack your eyesight, and you can use light to improve mood.

Brock, in there is this incredibly dorky-looking metal thing. I forgot to grab it. See that big tube on the ground? Will you bring that guy in here?

You can unplug it if you need to.

This is the joys of ... I have props for this thing arrayed all around me. If you're ever going to follow us on YouTube, this is the time to do it. Head on over to BulletproofExec.com/YouTube and I'll direct you to the page. While you're at it, follow the page please because it's really cool

to get followers. It helps me attract the right kind of people. This is an incredibly metal-looking thing that looks like a Klingon ray gun. What it's for is you stick your face on it. Right now I look really dorky. It has different filters you slide in and you can program it with a little computer device here.

It's called the photon wave. I don't even know if they make them anymore, but I have one. They were made in Belgium. It turns out that exposing the eyes to very narrow wavelengths of light, something in the light blue spectrum, but only 10 nanometers wide, it turns on structures in the brain that don't normally get it because it's all dark except for this one signal and that signal can shift it so they're having effects on things like autism, things like bipolar disorder, other things like that. Light is a signal to the brain. There is also color lenses that can magically change your mood, which is cool.

That's an older device, but one that is still used today by some alternative practitioners. You can say there's no evidence that it works, and if that is where your brain is going right now, there's one or two things you could do. One of them is you should just hit stop now, and you should go listen to another podcast because that's okay. Here's the deal. There is so much of this stuff out there. There are thousands and thousands of papers that I have read about light and about the brain and about the cells, and there's more about circadian biology coming online every single day.

Just a couple days ago on Facebook, I posted something about the fact that people with bipolar disorder responds differently to light at night. They tend to have disrupted sleep, which is caused by bad lighting inside. Number one sleep hack I keep talking about, cover your phone, dim the screen, and use a ZenTech filter, turn off LED lights and fluorescent lights and dim the rest of the lights at night or wear cool colored glasses like amber or red, and magically, you go to sleep better. I do this every single night. If you just say there's no evidence here, look, the evidence is that it works, and if that's not the kind of evidence you like, then seriously there's really good skeptic science troll websites. I would suggest Quack Watch.

By the way, before we go anymore, celebration time. Recently, the USA Today did an article on Bulletproof, which blew me away. I was so grateful for it. They actually met one of my massive goals that I have told a few friends about who actually were high fiving me. About 10 years ago, in my work in the anti-aging field with the Silicon Valley Health Institute, I've been President or Chairman for about a decade now. This is a group that springs world-class researchers in to speak on a regular basis, and sometimes local people and all, but it's been an amazing learning experience for me to work mostly with people who are 65+ and the people who are making them young again and to learn so much, to make myself more powerful.

All of the people I respect. Seriously, everyone who's ever disrupted medicine, everyone who's ever made a big discovery, has been picked on by a website called Quack Watch. This guy, Steven Barrett, who's never been a practicing physician, a psychiatrist, a very angry guy who has been sued multiple times and he runs the website that some people think, including me, by the way, is funded in part by big pharma, and basically anyone I've ever respected, really heavily respected and has broken new ground, gets listed on there as quacks, but I wasn't qualified because I'm not a doctor.

Steven Barrett was quoted in USA Today saying, "There's no evidence that Dave Asprey's going to live to 180." Newsflash, guys. There's no evidence that anyone's going to live any amount of time. If I could read the future, I'd probably just play stocks. Anyway, I can't read the future, but I'm doing everything in my power to live to 180, and I think it's a reasonable goal and that's where I'm going and that's what I'm doing, but anyway, I got called out by Quack Watch. Hallelujah. One of my life goals was to have a big enough impact to be on that website, and I made it. Thank you, Quack Watch. You guys go there. QuackWatch.com. Anyone that Steven Barrett picks on is probably doing something useful. Quack Watch. Ha. Thank you. Love you.

Great life starts with great sleep. Improving your sleep quality is one of the most important things you can do to feel amazing and perform better. One of the easiest ways to do that is to just improve your bedding. That's right. The sheets and the covers on your bed actually change the quality of your sleep. You spend about a third of your life in bed so you might as well get the best quality bedding so you can have the best sleep environment so that you can actually, dare I say, get better sleep so you need less of it so you can have more time in your day. It's totally possible and your sheets matter.

Ettitude is the first company in the world to create 100% organic bamboo lyocell bedding. It's a sustainable option that is designed to give you the best sleep ever with an innovative fabric that has benefits for how you look and how you feel. Ettitude's organic bamboo lyocell is one of the most sustainable textile materials of the 21st century. It's really cool because when companies waste resources, it affects the soil and it ends up eventually affecting you. What Ettitude does is they use high ecological and ethical standards with a closed loop system that recycles and reuses water up to 200 times to minimize waste. They're not only using bamboo to make these amazing sheets, but they're not even wasting water when they do it.

That kind of systems thinking makes me really respect what they're doing. The fabric that comes out of this process is incredibly feathery soft and really silky smooth. It's made with nontoxic dye, which is really important, and that means it's hypoallergenic and it's free from the chemicals and allergens that are in a lot of bedding. It's gentle on sensitive skin so it works for people with acne or eczema or psoriasis or dermatitis or just people who want to look good when they wake up. It's naturally antimicrobial so it inhibits bacterial growth because who wants that in their bed?

It's breathable. It's moisture wicking, so if you sweat at night, you still feel cool, and most importantly, it's thermo-regulating so no matter whether you sleep in the desert or in some arctic environment, it can keep you 2 degrees cooler in the summer and warmer in winter just by the nature of the fibers themselves. I'm really happy to share these bamboo sheets with you today. To be honest, I'm just happy I get to sleep on them. Be the first to experience this new kind of innovative bedding. Give your body and mind the rest they deserve. Go to Ettitude.com.au/bulletproof and get 10% off. Just use discount code `dave10` at checkout. That's Ettitude, E-T-T-I-T-U-D-E.com.au/bulletproof and use the code `dave10` at checkout. There's no minimum order and they'll ship to you anywhere you are.

Alright. Where was I going with this? By the way, everyone who does light therapy is probably

on there. At least everyone big who is doing light therapy. Let's talk about one of the first hacks you can do. Here, I'm not going to walk you downstairs because the cameras are fixed relatively. Downstairs in the Bulletproof Labs, I have a narrow spectrum UVB lamp, which allows me to make ultraviolet B radiation at night. I actually, in the morning, I said at night, I use it in the morning, it lets me sleep better at night. In the morning, because I live in Canada especially, during winter, I give myself about 10 or 15 minutes of standing in front of the light wearing nothing. Why? Because getting ultraviolet B light on the testes increases testosterone pretty substantially, and this is a little bit controversial.

I take off little eye protective glasses for about a minute and I look at the light and I do this because there is evidence that inside your eyes you actually grow melanin deep inside the eyes and a little bit of ultraviolet light is actually good for your eyes. Too much gives you cataracts. A little bit is an environmental signal to the mitochondria that they need to do their work. That's controversial. Your doctor and probably some eye doctors listening to this are horrified right now. It's not a recommendation. That's what I do, and actually I sleep better at night and I feel better all winter long when I get a little bit in the eyes and I get a lot more on my skin.

I'll tell you in 50 years or 20 years whether that my good for my eyes or not, but I believe that there's enough evidence to do that and it's helpful. Sunlight or ultraviolet light, especially UVB, UVB is the one that makes vitamin D. UVA is the stuff that gives you a tan and makes you age. You need some UVA as well. My tanning lamp does not have too much UVA, but it does make UVA. I bought my tanning lamp from Dr. Mercola, who is a friend, and Dr. Mercola used to sell tanning lamps because they're so terribly important for your health and well being. Now, he's not selling them anymore because he decided it was more important to be able to talk about ultraviolet radiation than it was to sell them, and he was getting pressure from regulatory authorities to not sell them because if you sell something it's harder to make truthful health claims about it so he took the high road and said, "I'm going to get paid less money so I can tell people how important ultraviolet radiation is."

He's one of the most important people who's early writings influenced me to think about what sunlight was doing and I do regularly expose myself to the sun. That's basic light hacking. What you want to do to take advantage of this, go outside. Do it in the morning. Take off your shirt. Wear a sports bra. That's what I do. Oh, wait, no I don't. Anyway, take off your shirt or at least expose your arms and expose your eyes for 10 minutes. If you do that earlier in the day, that's better. When you do this, you'll probably sleep better that night. It's pretty amazing what happens. You get more UVB between 10:30 am and 3 pm. You do that 3 or 4 times a week, even your ultraviolet B radiation will change the vitamin D that you take. I still recommend you take vitamin D, but if you take vitamin D and you don't expose your skin to ultraviolet, you don't sulfate your vitamin D.

It was Stephanie Seneff who came on Bulletproof Radio who really called this out as being one of the most important things. Ultraviolet radiation, particularly UVB from sunlight, activates vitamin D. It turns on the vitamin D that's in your body. It also helps to convert your cholesterol to cholesterol sulfate, which is more useful. Too much UV, bad for you. No UV, very bad for you. Right now, every window in your house and your car screens out all UVB because it's bad and because it bleaches fabrics and because it cracks the dashboard. The LED light bulbs you have,

no UVB, no UVA, and that's a bit of a problem. We're supposed to have some.

It's just like salt. If you eat no salt, it increases your risk of a heart attack. You eat way too much salt, which is probably more than 8 grams a day, 4 times the current US recommendation, you might have problems from it, but anywhere in that window is good. Too little is just as bad as too much. The same is true in these kinds of things. People have better nitric oxide, better blood pressure from getting sunlight, and get this, a decreased risk of skin cancer from regular sun exposure that doesn't cause sunburns. Here's the deal. Get some sun, damn it.

Alright. Let's talk about nitric oxide from sunlight. I mentioned that a little bit more, but I didn't tell you why that mattered. Nitric oxide triggers vasodilation so you get better blood flow. That means you get better circulation of nutrients, you get better waste removal, more oxygen, lower blood pressure. It protects your heart. It decreases inflammation. Nitric oxide comes from eating beets or bacon. Go bacon. The nitrates that are in bacon are similar to nitrites. Either one of them with healthy gut bacteria can help you make nitric oxide. If you have unhealthy gut bacteria, either one of them can help you make nitrosamines, which are bad for you, so don't burn your bacon. Get good quality bacon, but some nitrates or nitrites are actually healthy for you and beets are a good source of that and then go out in the sun.

Bacon, coffee, sunlight. Go. All you really need, 15 minutes of direct sunlight twice a week just for vitamin D. I think you should get it every morning though. Just a little bit. Let's talk a little bit about Irlen syndrome. I hit on it earlier. Find an Irlen practitioner in your part of the world. I-R-L-E-N. There are hundreds of them now, and I'm really pleased to be one of the first level certified people. I did that because my friends and people around me, I wanted to be able to show them the difference. Recently, I had the girlfriend of a Hollywood producer and Hollywood producer appear, a Hollywood writer, up in my house, and I tested both of them. He was fine. No issues. He was one of the 52%, but his girlfriend, after 10 minutes of testing and seeing how her brain changed when she had a different color of light in which she read, she looked at me and she swore and said, "Do you have any effin idea how much this is going to change my life?"

She was just completely blown away. Wow. After that, they did the 40 Years of Zen Program, which probably had a bigger effect, but hey, knowing that some colors of light might make you weak and that you can control those by either having colored lenses, my cool orange glasses, or my old Irlen prescription. I have some gray glasses now that are less orange because my brain has actually improved because I've been hacking my mitochondria. Cool stuff. One of the things that matters is the color of your light. Sunlight is the best because it's got the full spectrum. It's got infrared and it's got ultraviolet and all the colors in the middle.

As a signal to your eyes, you can get a little bit of blue light in the morning. I like ultraviolet and blue and infrared in the morning, which is what comes from a proper sun lamp, but getting some blue light's cool. Getting accessible light throughout the day, which comes from every LED light you use that isn't specifically red or amber and especially comes from your iPhone, it's going to blow your eyes out over time. I am forecasting literally hundreds of millions of global cases of macular degeneration that comes about as a result of staring at bright blue lights all the time.

Blue light is not a color that our eyes are good at seeing. It takes a lot of work to see them, and it makes the mitochondria in your eyes weak. What I recommend you do there is you install a software called F.Lux. That's F.Lux. I've used this since, geez, I got to say it's been a dozen years, and it really, really has helped my brain. I use the ZenTech screen protectors. Hey, Brock, will you grab one? They're on the shelves right down to your other side, bottom right. They're in cardboard thingies. If you're watching on YouTube, here's a couple of them. This one is for the iPhone 6+, and this one here is for, I don't even know where it says on here. It's for a laptop. I just don't know which laptop this one's for, but you basically put these things on and you don't really see that they're on there. They look just like a screen protector, but they block the most harmful spectrum of blue.

Blocking the most harmful spectrum is a good deal because if you're going to look at your phone at night, put it on night mode, which iPhone has. What I do is I keep my iPhone on night mode all day long. I don't want to look at a bright blue light indoors under fluorescent lights. It's just bad news. At night, you can do something else. Let me show you one of my demos here. This is a red light. Because I'm a dork, I found a lamp that looks either like a Klingon disruptor or a bong. I don't really know, but this is what I said. Go to YouTube, [BulletproofExec.com/YouTube](https://www.youtube.com/channel/UC...), subscribe to the channel, and you'll see weird stuff like this come up, but look at my face.

This is a really bright red light. When I write my book at night, this is what I used to illuminate Bulletproof Labs. I have strip lighting on the ceiling, and I have several of these around. It looks like a submarine in here. Here's the thing. My body knows it's nighttime. Red lights tell your body that it's dark. You need red in the morning, very early morning, and red at night. I can stay up later and I can write without breaking my sleep if I use red lights and I turn off all blue LEDs and all white lights. Cool. If you wanted to have a reading light in your bedroom, a red reading light will change your life. So will wearing those funky orange glasses I keep talking about.

Red light also does something magic. It stimulates collagen in your skin. If you wanted to, say, have better looking skin, you can use red and infrared on your skin. In fact, here's another thing that will do that for you. Let's see. You turn that on. This is a thing. There's a bunch of different companies that make these. They're not particularly differentiated. This is just a pad that has red and infrared LEDs, specifically something you can use for anti-aging. You basically just stick it on your face. You can stick it anywhere on your body and it actually helps with aches and pains and collagen synthesis.

You can see it's blinking a little bit. It turns out pulsing lights work a little bit better. Because that's just how I roll, I have coming from Bulletproof R&D, a new device that is going to be at Bulletproof Labs, something that you'll be able to come and use in Santa Monica and something that if you want to run your own bio-hacking facility that we'll be able to provide for you, and it's got 40,000 red and infrared lights on it. It's big. It's the size of a tanning bed, and you can literally turn up mitochondria in your whole body and stimulate collagen synthesis everywhere with a light like this.

It's something that belongs in a facility that's meant to be shared that you feel so amazing after a red and infrared light treatment. It's very different than an infrared sauna. It's going straight to the mitochondria, straight to collagen. That's pretty darn important. Red photons donate energy

to your electron transport chain. In my book about mitochondria, I talk about how you make electrons in your Krebs cycle and then you got to move them using the electron transport ... It's actually a system, not a chain. We like to think of it as a chain, but it's not. Just in a line. That's what triggers your mitochondria to produce more ATP. It's pretty cool stuff.

A really cheap light hack you could do aside from those red LED floodlights is another red tiny bulb. There's color changing bulbs. The white light they make is crappy, but if you wanted to do some blue in the early morning, you wanted to do some red, you can actually use those on your skin, too, but lasers work even better. Let's talk about lasers. Low level light therapy used to stand for low level laser therapy, but now infrareds have come out. It's just a more intense way of getting red lights and you get better athletic performance and faster muscle repair using these things. These are based on studies. It's pretty darn cool.

There's some showing increased energy. They increase ATP production in blood flow. In another study, they stimulate mitochondria. Another one says they're good for your joints. One says that they have better skin. In fact, I used a laser similar to this guy, and there's a bunch of brands of these. I'm not endorsing any one laser because there's plenty of people who are making lasers. You see that? What's going on here is this is it looks like this one's set on violet. There's red and blue and infrared things you can do. They do different things. I had whiplash. I had whiplash the first time and it took me a year to recover from it. It was miserable. My hands were cold. My head hurt. It was pretty bad, and whiplash is now understood as a brain injury. The brain sloshes around inside the head.

That was from a relatively mild car accident. Someone bumped me maybe doing 10 miles an hour. Three days later, I was just a zombie, but the second time I got hit, I was in a go-kart, and I stopped for someone who'd wrecked on the track and someone hit me at 35 miles an hour. It was a much worse whiplash, so I'm feeling really crappy. This was in the late 90s. A friend of mine, a naturopath, one of the early guys using lasers, brought a laser like this to me and said, "You know, dude, you got to try this." These lasers cost a couple grand. He put his laser on my back and within 6 minutes, I felt the pain up there just evaporate. It felt like electricity going up my spine. My hands warmed up within seconds. I'm like, "This is amazing."

I bought a laser because it was a lot cheaper than going to the chiropractor all the time, and I was fixed within 10 days. I'd never seen anything like that. To this day, half the time if you were to stop me at an airport and say, "Dave, you have a laser with you?" I oftentimes travel with it because you can use a laser for all these increased energy things. You want to look good and fly to Japan like I'm doing later this year to launch Bulletproof in Japan, I'm going to bring a laser and I'm going to use a laser on my face because you look better and you have more energy. It's amazing what these things do.

Let's see. What else would be good to chat with you about here. A couple of other devices on the floor, I think. Here's an example of one that's pretty cool. This is good old-fashioned light bulb. This is actually a halogen light bulb. The reason it's here is, look, LED lights save a little bit of energy. They're junk light. It's just like junk food. You don't eat food that's super high in sugar and bad fats. You don't want to use lights that are super high in blue light. You want lights that are balanced like the sun. The best thing you can do is incandescent or halogens. They're most

like fire. Yes, they make heat.

Note to self. Heat is a form of electromagnetic energy. Your body knows what to do with light that comes with heat. Your body doesn't know what to do with light that comes without heat because it uses that kind of light for its own signaling mechanisms. If your mitochondria use biophotons and they do to communicate back and forth and you muck them up, it's like shining a bright light towards moths. Speaking of that, since moths use those same frequencies, did you know that the LED light you have on your porch attracts five times more bugs than the old incandescent bulb you used to use.

You could be like me. I replaced all of my outdoor lights at my house. I live in the forest on Vancouver Island on an organic farm. We have tens of thousands of pollinators. There's 400 species of bees that live on the island, and there are owls that live within 100 yards of my house. I don't disturb all of their circadian biology either. It's rude. If I lived in the city, I wouldn't want to be shining an LED light through my neighbor's window and disrupting their sleep either. My outdoor lights are all red LED lights. Yes, I look like either Dracula or a brothel, but I don't care because the owls live right by the house and because I can walk outside and see the stars. You might consider what the light does to your environment because junk light's bad news for you.

There's something really, really amazing that happens with light. It's called melanin. You know the tan you get from melanin? There is, in your eye and in your brain, something called melanin, and most of medicine will call this stuff junk. They basically say, especially the stuff in your brain is meaningless. They say that it's junk, just like we used to have junk DNA and we used to have junk sugars called polysaccharides on the surface of our cells. It turns out they are required for our immune system to function. Whenever biologists call something junk, it's the height of ego. It's we don't know why it's there.

Some guys in Mexico figured this out, I believe, and I'm writing about this in my new book that melanin is this dark pigment. Guess what a major dietary source of melanoids is? It's polyphenols. Polyphenols are dark-colored things. All of the health foods you know about, coffee, chocolate, tea, berries, dark green leafy vegetables, red bell peppers, it's all things that contain polyphenols. Melanin is basically a bunch of polyphenols stuck together. In order to make energy using melanin, your body can use light and oxygen and just more polyphenols, even mechanical vibration, say rebounding or say Bulletproof Vibe or running or jumping or jumping rope or even breathing at night and moving your body up and down. All of those things can increase your melanin production.

The guys in Mexico who studied 6,000 people's eyes trying to answer one simple question, how is that there's melanin centimeters inside the eye and why is there more oxygen there than the lungs produce? Their theory and one I believe is that it's actually caused by melanin, that melanin actually creates oxygen by breaking down water. It's the only theory I've found that holds water, so to speak. I'm really intrigued by this research. Light is a signal for this stuff. You might want to keep eating polyphenols because there's a connection between that stuff.

The other thing that I'll talk about before I let you go, I think I showed you all my toys that I have here at my feet. There's one more toy I'll show you. It's that you have in your eyes something

called melanopsin sensors and these are sensors that are not plugged in to your visual processing at all. Blind people have them, but they're the ones that control your circadian biology, your light and dark cycle. If you expose them to blue light or white light that contains blue, it screws up your circadian rhythm, totally different than what you can see. In fact, there's a really cool study, maybe someone wants to use this study. I found out about this maybe eight years ago, and I wanted to build a product around it. It's a study that showed that if they taped red or blue LEDs to the back of your knee, it changed people's sleep quality.

They did a double blind study where some people had something taped to there with no light coming out, but they saw power going to it, but the bulbs were taped over. Other people had lights. No one could see. The researchers didn't know. The patients didn't know, but they found that if there's light on your skin, it changes the amount of REM sleep you got. What I wanted to do, and feel free to steal this idea if you want to, I would love to see something around this, is I wanted to make a REM sleep device that you could put on the back of your knee or maybe just on your wrist, anywhere you want where there's lots of nerves, maybe somewhere on the neck, and use red and blue LEDs in order to just let people have better dreams even though they might lose out on some of their other sleep.

I would want to use more red than blue. I don't think it's a really good idea to have blue light at night even on your skin. In fact, I don't want blue light on my skin during the day unless I'm out in the sun, but it's intriguing that your skin is photosensitive, but your eyes are photosensitive outside of vision and that that controls your sleep. That's why number one cheap sleep hack I know of, blackout curtains. If you can see your hand in your room at night, you need to tape something over. If you wanted to invest in the future of the quality of your life, invest in blackout curtains. It's that simple.

They need to really keep streetlights, especially new LED streetlights, out. I sleep in a forest. There are no lights around my house. I can see no human light. Actually, that's not true. I can see a radio tower with three red lights on it, but otherwise, I have a very clean environment. I still put blackout curtains because the darker it is, the better you sleep, and that's just how it is. Before we had all the drugs that we have today, people used to go to something called solariums to get better, and this is basically you go to the desert because you need better air and you sit in the sun and you get better. It's remarkable.

I mentioned earlier at the beginning the P450 liver enzymes got their name because of that 450 nanometer light that fluoresces when you find these enzymes, so we've been using light in biology for a very long time, and no one ever really talks about this. I think it's terribly important. I also think it's damned dangerous. Using a laser on your back is one thing, but if you're going to put lights in your head, very brief periods of time. Maybe consider working with someone who does this for a living. There are some neurologists and some people working with traumatic brain injury who use this. These general lasers tend to be safe, the ones that pulse. I've used this laser and others like it on my head pretty safely, brief periods of time.

The other thing you can do, if you really want to go low budget, and I'm almost afraid to tell you this, but I'm going to show you anyway because I feel like this. This is an illuminator that comes from ... It comes from a security system. It's an infrared illuminator for nighttime. Infrared lights.

Infrared light. You might be able to see that on the camera. It's a vague red color. You can't really see most of it because it's infrared and you're not supposed to be able to see. This light's about 6 bucks on Amazon. Pretty cool, right? I have more powerful ones, like that original one that I bought in the 90s that changed my brain dramatically.

This light is very powerful if you can use it over a site of injury and you'll feel better. Did I mention it's \$6? It's not medically approved. This is serious bio-hacking stuff, and it'd be better if we just knew about his entirely. This is what people are doing. It works. You can put this over blood flow on the arm, wrist, put it on the side of the neck, but if you hold this over your brain, same thing. Not more than a minute. Move it around. The reason for this is even a couple of minutes on your brain can leave you profoundly tired the next day, but then the day after that, it's like the brain just wakes up and it actually stimulates mitochondrial function.

There are some other things happening. If you listen to the podcast at Bulletproof Radio with Gerald Pollack who is speaking at the Bulletproof Conference, he's one of the guys who just deserves some major prize for his work on water chemistry. He figured out, and in fact, he said right on Bulletproof Radio that the thing that makes structured water, if he was to bet right now what you should do to get more structured water is infrared, that you can put a bank of infrared lights by his water. I haven't done that yet, but I'm thinking about it. I have lots of things that do weird things to water around here because I'm a bio-hacker, but what if you're changing the water in your cells when you go into the sunlight? What if you're changing the water in your cells when you use an infrared? What if you're changing the water in your cells when you use lasers?

I'll tell you based on the research in my book, you are. The reason this matters, this is very recent research, this comes out from 2014 and 2015, now that we have the ability to look at mitochondria in action, we're finding crazy stuff, but it turns out the viscosity of water, in other words, how fluid the water is, is it runny or is more like glue, changes the efficiency of your molecular machinery. The water you drink has to be converted into something called exclusion zone water, which is easy water. This is based in large part on Gerald Pollack's work, as well as a guy named Douglas Wallace, who's done a lot of just groundbreaking research on epigenetics and mitochondria.

These are the guys I've been following for a long time and they're subjects of my new book. I'm really excited to bring more to you. My first mitochondrial bio-hacking was with a light very similar to this one in the late 90s and I'm actually going to bring that device and show it on stage. It's probably the only one in existence anymore. I'll show it on stage at the Bulletproof Conference. I've been using things like polyphenols to hack my mitochondria and a bunch of other substances and practices and techniques, things like cryotherapy. The mitochondria are calling the shots in our bodies.

You could look at us as a collection of thousands and thousands, actually trillions of these mitochondria, that float around inside our cells, tell the cells what to do and tell you what to do because they're paying attention to the environment around you. That's how the body works, and light, electromagnetic radiation, temperature, vibration, and food are all of the big signals. Guess what the other one is? Stress. If you're feeling love, you're feeling gratitude, you're

feeling forgiveness, you're feeling peace, you feel it in your cells because the mitochondria sense the amount of stress in the environment, stress that comes from you.

We know that mitochondria are magnetically sensitive. We know that the single biggest magnetic thing in your body is your heart. It's the largest source of a magnetic field. You could say that's a bunch of woo woo. In which case, I'd say, "Whatever, woo is a pejorative term, you science troll, you, because here's the deal. Using a magnetic detector for physics, they actually know the shape of the field. It's tipped 8 degrees to the left and it's shaped like a big doughnut and we actually have pictures of how the flux in it circulates. When did I find out about that? About 2007 when the head researcher for the HeartMath Institute came and spoke at Silicon Valley Health Institute and blew my mind. That's one of the reasons I'm a certified HeartMath practitioner, one of the reasons I use heart rate variability training with all of the people that I coach.

We now have the Bulletproof Coaching Program where we have hundreds and hundreds of people becoming licensed Bulletproof Coaches and all of them are learning heart rate variability because it's so important. Could it be that there's a relationship between your heart and your mitochondria? Damn straight there is. Could it be that if your heart gets more sunlight or heaven forbid, you might shine an infrared light on your heart that interesting things might happen? Yeah. Is there enough science on this? Probably not. Is it dangerous to shine an infrared light at your for a couple minutes? I do it, but I'm not also at risk of a cardiac event. I don't know if I'm going to give myself some disease later. I think the evidence is that doing it is going to provide more benefit than not doing it, but I cannot tell you this for sure, which is why this is an area that is very powerful and also potentially risky.

I have a different risk curve than the average person. It's because I used to be obese. It's because my brain was turning off in my mid 20s and because my body was basically wrecked. I had a lot of stuff going on. I had autoimmunity. Living like that, living like you're 80 when you're 20, there is nothing more important than ending that, which has led me to become the world's most famous bio-hacker, which wasn't my intent, but I will happily share all the stuff that works with you, but please hear what I'm saying about the potential risks of this kind of stuff. You can poke holes in your eyes with lasers.

This laser is de-focused. It's safe for use on the eye. Your laser pointer will not have medical effects because the power supply isn't stable enough. You need to use an actual medical laser that are made differently. Some medical lasers can harm you. Some can completely blow out some of the meridians you use for acupuncture. You can use lasers or LEDs on acupuncture meridians. You over-simulate them and you can mess up the delicate electron flow that happens to your skin. This is an area of science. Ten years ago, most people didn't think acupuncture had an effect. Now we can sense what it does. We can actually measure that acupuncture is doing things and we can see it in medical trials.

If you're sitting here going, "There's no evidence of that," it's like, "All you have to do is open your eyes and read." There's plenty of evidence of that, even though, yes, we did used to say acupuncturists were somehow witch doctors. It turns out it was the Western skeptics who were the witch doctors. They were ignoring evidence. Same is true of light therapy. It works. I want to



learn a lot more about this. I think this is going to change the world and also, for God's sake, throw away your sunscreen unless you're going to be out in the sun for hours and hours and hours. Get a little bit of a tan, and that's your beginning of light therapy.

That's the end of this episode of Bulletproof Radio. If you enjoyed it, you know what to do. Buy a copy of the Bulletproof Diet for a friend of yours or, if you've never actually tried Bulletproof Coffee with brain octane, brain octane is not MCT oil, there's four kinds of MCT oil and some of them work, some of them don't work, and there are massive supply chain manufacturing issues with MCT oils in general. A lot of them are made in China. Not all of them are pure, and a lot of MCT oil causes something called disaster pants. This was such a problem when I first invented Bulletproof Coffee that it was a joke.

With brain octane, we've eliminated that problem for almost everyone. You can get more ketones with less calories. You can feel the difference between a weaker MCT oil and actual brain octane and certainly you can measure the difference very easily against coconut oil. Go on out and try it. The cool thing is most MCT oil on the market and there is no brain octane oil other than brain octane oil out there because it's different, most of it is made from palm oil and from coconut oil in combination. We've used palm oil from ethically sourced companies historically, and over the past 2-1/2 years, I've had to break some supply chain rules. I'm making substantially less per bottle on brain octane now, but it is 100% derived from coconuts, which are sustainable.

To get palm oil, even if they're not killing orangutans like a lot of unethical palm oil does and a lot of MCT oil is not from certified palm sources, sorry, certified palm safe sources, even the palm safe places are causing massive habitat destruction in rain forests. We need those rain forests to make air for us. Coconut is more sustainable, so brain octane is now 100% coconut based. If you never tried it, all I can tell you is that you feel the difference the very first time. It's one of the big secrets of Bulletproof Coffee. The right beans, brain octane oil and grass-fed butter, you'll get a lot of polyphenols in there. Polyphenols are activated by light. Try this. Make yourself a real cup of Bulletproof coffee and go outside and enjoy it in the sunlight and see what happens to your brain. You might like it. Have a beautiful day.