

Dave Asprey:

Today's episode is super fun, and you're going to want to listen through all the way to the end because I'm interviewing one of the world's very top experts on smart drugs. We're going to tell you things like how you can get rid of herpes with a supplement that's almost free. You're going to hear about the future of cognitive enhancement, the future of living forever, how long he thinks he's going to live, and some really interesting discussions at the end there around some of the psychological sides of things. It's a fascinating episode with a truly brilliant human being. Hopefully you enjoy the whole show.

You'll be listening to Bulletproof Radio with Dave Asprey. Today's cool fact of the day is that we just found a drug that promotes goal-directed behavior. Basically, this is a drug that stimulates neuron pruning that can push, at least mice, away from habit-driven behaviors, at least when they combine it with retraining.

The drug is called fasudil. It's approved in Japan for treating strokes, and what it does, it inhibits an enzyme that stabilizes your spine's internal skeletons. They don't really have a skeleton, but that's how they describe it in this study. They think what these tools could do is be effective in facilitating treatment of drug abuse and preventing relapse. What they're saying is some habits are adaptive. You can turn off a light when you exit a room. It's good for you, but others are maladaptive, like checking the light switch 500 times, or using drugs all the time.

What they're trying to do in this study is saying, how do we help people break a habit like cocaine? They're thinking that this may work. This is right at the cutting edge of using either food, nutrients, lifestyle, environmental factors, or even pharmaceuticals to increase neuroplasticity, or make it easier to do something.

One group of people can say this is profoundly evil, although I've got to tell you my deal here is, look, if I [00:02:00] can find a way without harm, or without meaningful harm, to make it easier for me to do something that I have chosen to do, I will always take that path. You say, "What if there's something we don't know?" I got bad news for you. There's something you don't know right now. You just haven't thought about it. In fact, right now there are millions of environmental variables programming your biology, and you didn't think about all of them. If you weren't afraid before, be afraid now.

All right. Time for today's show. One of my favorite human beings in the biohacking realm, a guy I've known for almost 20 [00:02:30] years, the guy who wrote the book, "Smart Drugs & Nutrients II," this was a while back, and the guy who actually saved my career before I met him. This is a guy who in the '80s and early '90s ran something called Smart Drug News, which was a printed newsletter that he sent out about all the things you could do to enhance your brain.

When my brain was falling apart, I was working in Silicon Valley. I'm not just able to pay attention, and I can't remember anything, I downloaded [00:03:00] these newsletters. I read them all, and was like, "I can try this. I can order this stuff." It was Steve. Steve Fowkes is the guest, by the way. It was his work that got me order my first \$1,200 of smart drugs from Europe that turned my brain back on, that let me keep working, and eventually led me to become a professional biohacker.

This guy is old-school mad scientist, brain hacking, biohacking, going to live forever genius, a dear friend and advisor, and just someone who has my utmost respect. Steve, welcome back on [00:03:30] Bulletproof Radio. It's been awhile.

Steve Fowkes: It has been awhile. It's good to be back.

Dave Asprey: How's that for an intro?

Steve Fowkes: Good. Yeah. Your sales gene is showing.

Dave Asprey: My sales gene? It's all true though, everything I'm saying. You've actually spent, I would say now, 30 years looking at cognitive enhancements, and looking at the anti-aging movement and how to live a long time. Your work has percolated throughout the field, and it's had [00:04:00] a huge impact on my ability to do stuff. Just wanted to first say thanks, and then I want to pick your brain.

Steve Fowkes: Fire away.

Dave Asprey: Let's start, before we get into the brain stuff, let's just start with something else I just posted on Facebook recently. You wrote a little book a while ago about a preservative called BHT.

Steve Fowkes: Indeed.

Dave Asprey: That's butylated hydroxytoluene, which has taken a bad rap because they use it in some packaging materials to maintain product freshness. What was your book about? [00:04:30] Give me the skinny on what people can use BHT for.

Steve Fowkes: BHT was originally, the initial breakthrough research was done in 1975. It was used as a treatment for herpes. The original studies were done with herpes, and then they gradually found out that when they studied a broad selection of viruses that it worked on all the lipid envelope viruses, which was a broad spectrum of some of the most troublesome viruses for humans that exist on the planet. That covers the realm for CMV, and Epstein-Barr, and even things like influenza [00:05:00] that we run into fairly regularly, some of the really exotic ones like SARS and Ebola.

Dave Asprey: What about herpes?

Steve Fowkes: Herpes is where it started. When I started a vitamin company way back in the bad old days of 1979, it was one of the products that I introduced to the US health food market, and that was an interesting idea of selling a preservative to people who were very anti-preservative, but we did it. We started getting all these reports from people who had used [00:05:30] BHT in a variety of ways. About 20% of them were people who were saying, "Well, my skin improved. I look younger," and various kinds of skin problems resolved.

Because I was selling product and selling BHT, I couldn't talk about any of those kinds of findings. That was back in the days where free speech didn't exist at all for commercial speech.

Dave Asprey: It still doesn't. At least, I was recently told, "Dave, you are no longer in the [00:06:00] era of free speech. You're in the era of controlled speech." Once you start selling a product that you believe so much and you created it, you're no longer allowed to say some of the things it does, which is a bizarre thing. You ended up writing a book about BHT that's available online at various places, and you were finding people were completely eliminating herpes with essentially a dollar or two worth of synthetic preservative.

Steve Fowkes: Yeah. Over the course of a year, maybe they might spend \$10.

Dave Asprey: Okay, a dollar [00:06:30] a month. Sorry, but to this day you see people spending thousands of dollars on anti-herpes meds, when there's a cheap, available, and largely safe supplement. It's not even a supplement. It's a synthetic thing, but whatever you want to call it, you can take it, and it dries stuff up. It's an off switch for these viruses, and it's almost free, but no one talks about it except for you because you put it on the market.

I wanted to offer that to listeners. If you're dealing with those uncomfortable sores in uncomfortable places, visible or not, there's a quick and almost free way to solve the problem.

Steve Fowkes: Yeah. One of the things that [00:07:00] I run into a lot is cytomegalovirus, and hepatitis C is the one that I think is considered to be more troublesome than the average kind of lipid envelope viruses in terms of modern drugs. Many people try all the different drugs for hep C, and none of them work.

I had a client, well, a father of a client, who was actually dying, who had very high hep C titers in, I think it was, secondary to hemochromatosis, too much iron. [00:07:30] He did BHT, and within a week his titers dropped, and within a month his titers were 25% of what they were before the BHT. This can be incredibly powerful even in people who have tried a lot of drugs, and none of them have worked.

Dave Asprey: For a while in the '80s, people took BHT as an anti-aging drug. I took it for about a year or two, but then I found a set of studies that said long-term use probably isn't so good for your liver, and I quit doing it. Do you take BHT today?

Steve Fowkes: Not at the moment, [00:08:00] but a couple of days ago when I caught a cold and didn't know if it was going to develop into a flu or not, I took some BHT at that time. I have it just sitting on medicine chest or my lazy Susan of vitamins. It's sitting there waiting for circumstances. I've used it a dozen times during my life.

Dave Asprey: Yeah, I also have a bottle of the stuff, and if there's something weird going on, I'll take a little bit, but I don't take it on a regular basis anymore. Normal dose, 300 milligrams or something like that, if I remember right?

Steve Fowkes: Yeah. I do anywhere from 200 to 1,000.

Dave Asprey: Okay. [00:08:30] For people listening, there you go. If you have strange viruses, and you can Google is it a lipid encapsulated virus. If it is, this stuff gets in there, messes with the way the virus uses fat, and the virus dies, and you don't. That's cool. That was just a quick little nugget. Let's get into the real meat of things. How long are you going to live, Steve?

Steve Fowkes: Somewhere between 99 and 130.

Dave Asprey: Only 130? Why?

Steve Fowkes: Because we haven't got a breakthrough yet for actually obstructing the [00:09:00] maximum lifespan of the human species yet. I expect that that could easily happen in the next 10 years. There's so much money and improved understanding of aging mechanisms that's certainly possible, but right now the maximum lifespan is somewhere between 110 and 120 years. That's where my current vision is, that I'm going to live to be that age.

Dave Asprey: Okay, got it. Assuming no additional scientific progress, you think you've got 130 in the bag with the stuff we already [00:09:30] know today?

Steve Fowkes: One hundred and thirty is pushing it, but 110 is not unreasonable, and certainly 100. Since I'm about to celebrate my 66 and two-thirds birthday, that means that I'm two-thirds of the way to celebrating my 100th birthday. That will be a big party.

Dave Asprey: It will be a big party. I will fly down for your party, Steve, because you're that kind of guy. I actually agree with what you're saying. Today, I would say if we didn't have any improvements in scientific progress, [00:10:00] and we just had the tools available today, about 120 seems pretty reasonable. One thirty is pushing it.

I'm just betting, given what happened over the last 30 year, over the next 30 years a few things are going to shift, which is why I don't feel bad about saying at least 180 for me. I also have about 20 years on you in terms of I'm 20 years younger than you, which means I have 20 more years of additional progress at the current exponential rate of change. I don't feel that I'm even being aggressive with something like 180. Do you? Is that a little crazy pants?

Steve Fowkes:

No, because it looks to me [00:10:30] like somewhere about now or certainly within the next 10 years, we'll be learning enough to shorten one's mortality by one year for every year of scientific progress. When you get to that point where you become a year older, and the projections are you're going to live more than a year longer, you're now in the realm of catching that anti-aging exponential growth curve and riding it into the far future. [00:11:00] In terms of accidents as being a cause of death or political unrest and riots and stuff like that, we'd probably live to be about 2,000 years old before we'd accidentally die of something that we didn't anticipate.

Dave Asprey:

One of my most controversial anti-aging strategies is that I drive a heavy vehicle. I want to be the hammer, not the nail if there's an accident. Sorry. There's actually really good science around that, just in terms of longevity and having physics on [00:11:30] your side, which is not to say that I wish something unwell of anyone else who might run into me. That just seems like one of those ways maybe I can avoid that, or maybe I can walk away from something that would have killed me otherwise.

This is something, if you're planning to live hundreds of years, your odds of a piano falling out of the sky and hitting you go up for every day you're alive. I also have a piano umbrella that I carry around.

One of the things I've been doing, Steve, largely because of the inspiration that came years ago when I started reading about smart drugs with you, and then I got connected with the Silicon [00:12:00] Valley Health Institute, this anti-aging nonprofit research group that I've been an executive of for almost 20 years now, is I've been aggressively pursuing these anti-aging therapies like stem cells, natural killer cells, mitochondrial enhancement, and pretty every much I can think of that might give me 1% here, 10% there, with the idea that these will become built into our healthcare system. These will become built into the things that we do just as human beings.

They're expensive now, but they won't be expensive 10 years from now, just like cell phones. Dropped [00:12:30] in price, over and over. I'm expecting the same thing to happen. You have a little more experience than I do though. Are you encouraged by the progress that we're seeing? Do you think the cost of anti-aging therapies is coming down at a reasonable rate? Do you think it will come down?

Steve Fowkes:

It is coming down, and it's going to come down even more, but I don't put much store in those kinds of interventions. I think that by the time stem cell

reimplantation technology is approved by the [00:13:00] FDA, we'll be able to take older stem cells and rejuvenate and clone them. Therefore, there will be an end run around that technology.

Plus, so much of what is involved in aging is based on subtle systems and feedback systems in our biology that the real breakthrough is going to take place in the application of sensor technology and large dataset processing to wearables. In other words, if you could put a device [00:13:30] on you and monitor blood flow in your brain and EEG activities and stuff and look at things like sleep quality and microcirculation and heart rate variability and track that kind of stuff on a minute-by-minute basis, urine pH changes on a minute-by-minute basis, they will be able to reverse engineer pathologies at such an early stage that a lot of anti-aging therapies will fall by the wayside, or will only be [00:14:00] analyzed in terms of how they influence these kinds of metrics.

Dave Asprey: You're looking at a world where you wake up in the morning, and your ring or your mattress or something tells you how you did last night. You wake up. You pee, and the toilet tells you how you're doing right now based on your pee, and some other possibly implanted or stick-on sensors or cameras in the room are monitoring you so that you know very early when something is going the wrong direction, and you can take corrective action?

Steve Fowkes: That's right, and that you'll be able to judge every supplement that you take, every food that you eat, [00:14:30] every activity that you do, the quality of your exercise. How does your heart rate recovery play into your well-being? You're able to judge all those based on this continuous monitoring that's going on.

Dave Asprey: This may sound like science fiction to a lot of people listening. I did my first heart rate recovery thing in 2008 with the HeartMath Institute. I wore a 24-hour EKG thing for a week. I was CTO at Basis, the wristband [00:15:00] monitoring company, the first guys who get heart rate from the wrist, including heart rate variability, although they never turned it on.

Now we actually have this monitoring technology and it's getting better and cheaper all the time. What we didn't have was adequate machine learning, where you can take all this data, stick it up in the cloud. That's just coming online now. We're seeing companies like Viome, is doing that with everything going on in your gut to see what's happening there.

We're doing it with brainwaves at 40 Years of Zen [00:15:30] at Bulletproof Labs. We're taking all these exercise metrics along with a bunch of blood data from the clinical side of the operation there, and when you plug all that in for hundreds of thousands of people, I think, like you said, there's learning that no one knows. It goes so far beyond clinical drug trial or the nurse's study of whatever people remembered eating for the last month.

That data is dirty and not real time. We're not looking at all these metrics, so I'm 100% with you [00:16:00] on where we're going there. I think there might be some sizable resets, like you can make your immune system operate like you're 20 years younger than you are. If there's upgrades along the way, I'm going to plug myself into those. I absolutely agree. Prevention, where you know what's going on 25 years before you're going to feel it, like that's the most precious knowledge we can have.

Steve Fowkes:

I think it goes far beyond that. For example, back 30 years ago I was doing urine pH testing, urine pH monitoring, where [00:16:30] every time I would pee I would measure my urine pH. I would plot the results over a 24-hour cycle as a curve, and would then look at how Monday was different from Tuesday, was different from Wednesday based on different kinds of breakfast or taking a different supplement, or whatever it was. There's a limit to what you can do with that information when your urine is an average pH [00:17:00] based on the urine coming out of your kidneys being diluted into a volume of urine, which you can only collect when that volume reaches a certain point that you can actually pee.

If we could stick a sensor into the ureter and get pH data every minute, even an act of eating a candy bar and what your reaction to the chocolate and the caffeine, [00:17:30] what's your reaction to the methyl and propylparaben in some kind of liquid dietary supplement, as opposed to a capsule dietary supplement? We'll be able to extract all that kind of precision data from a data stream once we have a generalized analytic engine, a narrow artificial intelligence that knows how to take any two data streams, massive data streams, [00:18:00] and look at the correlation between them, and then correlate that with other data streams.

Right now, that technology isn't available. Each company has their own analytical engine that applies only to what they're tracking, but in the near future this is going to be a generalized system where anything that you pay attention to, your aches and pains, what you eat, if you're photographing your food, in terms of taking dietary supplements, in terms of getting [00:18:30] a notice in the mail about an IRS audit, all this information will go into this analytical engine. It will then output advice to you about, "Oh, you need to calm down. You need to take a deep breath." Or, "You need to call your accountant. You need to take some vitamin C. Your redox potential is out of control. You're having a bad reaction to a vaccine," before you have an autistic reaction or [00:19:00] an alteration in your blood-brain barrier that would naturally follow an alteration in your gut barrier.

Dave Asprey:

I am looking forward to the day when we have sensors like that. I'm also a little concerned about bathing myself in electromagnetic frequencies that change the voltage gated calcium channels in my mitochondria. You concerned about EMFs, Steve?

Steve Fowkes: I am one of those people who doesn't own a [00:19:30] cell phone. You can say I'm a poster child of awareness of that kind of issue. For example, blood flow technology for the human brain and looking at vascular changes and in a sense measuring what would be an artificial or an analog of an EEG signal, that could be done with infrared light, which could go right through the skull, and now Mary Lou Jepsen is talking about the potential, the near-term [00:20:00] potential of having micrometer resolution of your brain tissue for two to three inches of depth underneath your skull, and to be able to do that with a device the size of a cigarette pack.

Dave Asprey: This is using infrared light?

Steve Fowkes: Using infrared light, where there isn't any EMF. Now, I'm not also concerned about EMFs on some level because we live in an EMF environment. We just have the natural environment, and we have an unnatural environment. Cell phones create an unnatural one, but the Earth's magnetic field and [00:20:30] our movement and exercise in that field, that's a natural EMF environment.

A lot of the functioning of the brain depends upon local tissue microcurrents that are created by, for example, electrical signals of your nervous system that will then alter the way an ion flows through a gate. You can alter that by an external field, or by a certain frequency of modulation. We'll [00:21:00] be learning all of those kinds of technologies. Once we have an ability to judge that tissue level response, we can then analyze absolutely everything we on a therapeutic basis or on a lifestyle basis for its effect on those systems.

Dave Asprey: I think one of the 10 biggest trillion-dollar kind of opportunities out there is EMFs, since we know that we naturally live in them, there's no reason that we can't make cell phones and wifi that are biologically compatible with us. The amount of infrastructure refresh [00:21:30] that will be required when we figure that out, you think Cisco was a nice IPO in whatever, 1995 or whenever they went public? That's nothing compared to what would happen now to the company that patents the technologies required to allow us to have wireless communication that doesn't muck up our bodies, at least as much as it does now. This will get [crosstalk 00:21:50].

Steve Fowkes: It's illegal. The Federal Communication Commission does bandwidth allocation where you can't build cell phones in bands that are biologically [00:22:00] friendly.

Dave Asprey: Interesting. That'll change, or built it in Singapore, where they just don't have any control.

Steve Fowkes: That's true, or the open ocean, or maybe it will be done using some alternative more like red or infrared lasers or systems or something like that. Technology always tends to bypass those kinds of regulatory burdens once you know that a

problem is there because you're collecting all of this biological data. The political system won't be able to pretend like it's not [00:22:30] a pathology.

Dave Asprey: I feel like we're at that stage where cigarettes were. You know, they're actually not good for you even if they hired a guy in a white lab coat on TV to tell you that smoking was good for you. There's no reasonable argument that says holding a cell phone up to your head is good for you because it says in the instruction manual with your cell phone not to do that.

Now we understand mechanisms, we know this. I think 20, 30 years from now, we'll be looking back going, "We were kind of stupid back then," but now we understand it, and we love our ability to have wireless communication. We just do it smarter. I'm sure hopeful.

Steve Fowkes: That's right. [crosstalk 00:22:59] I think [00:23:00] it's true. Just like it took us 30 years or 40 years or 50 years to recognize that putting lead in our gasoline was a folly. We will eventually come to that conclusion as well about EMFs. The convenience of leaded gas and the convenience of cell phone communication are certainly compelling enough to why would resist those kinds of technologies.

There was actually an interesting inventor who invented what I call a butterfly antenna for a cell phone, [00:23:30] where it has a directed antenna that puts a lobe, two lobes instead of having a spherical lobe for broadcasting, where your head sits in the middle of the sphere. It has a lobe in front and behind the cell phone, where your head sits in the node between the two lobes. It turns out that the battery would last 3% or 4% longer because that energy that was absorbed by your head is no longer being absorbed by your head.

Dave Asprey: Nice, so you get better [00:24:00] battery life and you don't cook your brain. I like that idea.

Steve Fowkes: Yeah, it's pretty perverse, isn't it?

Dave Asprey: It is indeed. This is so fun because you can go pretty deep on a lot of these topics. Let's talk about cognitive enhancement. Years and years ago, you started the Cognitive Enhancement Research Institute. This has been a passion for you for as long as I've known about your work. Is it?

Steve Fowkes: I was actually looking at neurotransmitters and the role of amino [00:24:30] acids in neurotransmitters when I was in college in 1974 and '75.

Dave Asprey: I was just out of diapers when you were looking at amino acids and neurotransmitters. There we go. Given your life's work in that field, at least your life so far, which is just getting going, you're barely halfway, but what do you think about the real possibility of increasing someone's IQ? What's your take on that?

Steve Fowkes: I think increasing [00:25:00] IQ is very difficult because you're talking about adding a mental capability that isn't necessarily inherent, but for most people that's not really the goal. Most people who focus on the issue of smart drugs and cognitive enhancement are about regaining mental abilities that they've lost, of restoring their functionality to what they remember in the good old days when they were younger. [00:25:30] That, I think, is quite reasonable.

Dave Asprey: You can recover IQ? I would agree with that. It's much easier to recover IQ that you lost. I believe though that most people are walking around with brains that are wired for more intelligence than they have, but that their entire life, they either didn't get the right inputs or there's nutritional or environmental in order for the brain to express what it's capable of.

In other words, you're running at 70% of your capability that's always been in there. You just didn't turn it on. That intelligent [00:26:00] enhancement is more about taking advantage of existing hardware, not necessarily upgrading the hardware you have to be smarter than you were. It's like running software that makes your computer more efficient, makes the computer faster when you do that even though it's the same processor.

Steve Fowkes: Schoenthaler and Benton and Rogers, was it, did independent studies in California and Great Britain for looking at the effective nutrients on IQ in children, grade school, high school aged children. Both found that [00:26:30] about one out of three children has an IQ impairment, which is the result of simple nutrition. They would give broad spectrum vitamins with minerals with RDA level supplements to these kids, and there was an average of 3.4 IQ increase in the entire population as a result of this.

But when they analyzed the data, they found that two-thirds of the kids almost had no improvement, and one-third of the kids had 10- [00:27:00] point IQ increases as a result of taking a few cents-a-day cost vitamin supplement. That goes to that question of how many people have just been living their entire lives with suboptimal function because of nutritional issues?

Dave Asprey: That's a profound statement. I'm assuming the primary thing there was iodine? I think lack of iodine is responsible for massive global IQ loss. Were there other nutrients that were part of it?

Steve Fowkes: That's more of [00:27:30] a developmental issue. Certainly, the human brain develops. It develops in utero. It develops in the first two years of childhood. It develops up until adrenarche. It develops up to puberty, and then it develops up to adulthood. Each one of those stages involves different levels of brain development that lead to different kinds of skill sets.

My skill sets are very spatial and aren't in the area of language and [00:28:00] verbal skills, even though I can do okay in that area. I'm really good at design work and three-dimensional representations and schematic art. A lot of the

work that I've done as an editor has been in the realm of adding scientific illustrations to books.

That whole idea of saying for somebody who doesn't have that skill set, could you take a smart drug that would make your mind spatial? I doubt that. [00:28:30] I think that that's more of a matter of neural network and axon branchings and connections, interconnections that would be laid down certainly during gestation, but probably also get significantly pruned in the first two years of life when half of the neurons in your brain die and are absorbed by the other half. The ones that die are the ones that are incorrectly connected, and the ones that get fed by the ones that die are appropriately [00:29:00] connected.

That reinforcement of a random process into a tuned process, once that's done, it's done. Trying to rewire your brain, that's a technology that isn't about taking a pill or taking a smart drugs.

Dave Asprey:

There are some studies of pharmaceuticals that allow more dendritic sprouting. For instance, you can take some low-dose deprenyl. You can take things that raise a compound called BDNF, brain-derived neurotrophic factor. I know you know what that is, but listeners might not.

BDNF comes from exercise, but [00:29:30] you could take some polyphenols that increase it by four times more, things like lion's mane, blueberry, or we make NeuroMaster. It's a supplement that does that specific thing. I imagine a future where you take some stack of pharmaceuticals and natural things that make your brain super plastic, and then you use either virtual reality or neurofeedback or vestibular balancing stuff.

You basically put the brain into a younger state, acquire a new skill set, but it might take a year of drooling on yourself. [00:30:00] I'm not really sure. Is that a reasonable thing to think about in the future, or do you think we're just not going to get there?

Steve Fowkes:

No, I think we will, but right now all we can see is the basic glimpse of that possibility. The exact way in which we might take advantage of it, I don't think anybody really has a clue as to how that is eventually going to be implemented. Once we have an ability to look at, let's say, [00:30:30] the structure of the human brain at micrometer scale or let's say 100 nanometer scale, we'll be able to map all those axons and dendrites, and all the synapses. We'll be able to map those and look at how they change with time, how they change with aging. How they change with taking a learning drug, or how they change with a learning experience.

That will allow us to get feedback about this [00:31:00] to tune those technologies. Right now, we're kind of like blind men feeling up an elephant to say, "Oh, it's like this trunk. Oh, it's like a leg. It's like a tail. It's like an ear." We

can't really do much with that kind of information. We don't have the subtlety to deal with the brain on its terms.

The human brain is an incredibly intricate machine in terms of how it's wired, in terms of how it functions, [00:31:30] its electrochemical, its electromagnetic, its actual chemical. There's also storage mechanisms. There's a kind of holistic way in which the brain functions in terms of signals that bounce around and have ripples that reinforce or cancel each other. There's just all of the subtleties to it. Each one of them can be measured, but on some level we need to measure all of them simultaneously.

Dave Asprey: It's a big engineering challenge, and there are a group of us out there who are willing to say it's still [00:32:00] a black box. In the tech world where I come from, a black box is what you can't open. You don't know what's going on in there, but you know what you put in, and you know what you get out.

Steve Fowkes: That's right.

Dave Asprey: With enough machine learning and enough experimentation, and just the ability to share the experiments that happen in something as simple as the Facebook group, or just to talk about them and say, "Wow, these 50 people tried something and got stupendously effective results." We can zoom in on, okay, we don't know what's going on in the black box, but we know for a [00:32:30] sizable number of people, if they do X, then they get Y result.

The risk is that the people who don't get Y result, if they get a really bad result, okay, then there's all sorts of ethical questions and ethical considerations. The old ethical dilemma, if 80% could double their IQ by doing something, but the other 20% would become profoundly impaired, would you choose to do that? It's just a personality type thing. Some people would say, "Yes, I would do it in a minute. It's worth it." [00:33:00] Then there are societal questions.

We're going to face all this, and I think it's over the next 10 years. This is not a 50-year problem, at least not given the slope of the curves that I'm seeing. Do you think I'm aggressive on the timing, or do you think that it's going to take longer than that?

Steve Fowkes: I think on some level I agree with you even though I can't see the path to get there. When Jepsen talks about her new deconvoluting technology for taking infrared light, coherent infrared [00:33:30] light and deconvoluting it to determine what structures that light passed through in the brain, in a sense to map the brain dynamically, there's nothing like that on the marketplace short of, let's say, MRI technology or CAT scan technology, which if you look at the machine it's the size of a Volkswagen, and it's \$5 million.

You need a special foundation in your building to run it, and this is by means portable. [00:34:00] To be able to switch from that kind of investment to, let's

say, \$100 device that's the size of a pack of gum that you can wear on your forehead, that's such a transformative technology that any prediction of future benefit that considers only the old way of doing things is going to predict timeframes of 50 years, when [00:34:30] this new technology might make it in five years.

Dave Asprey: I'm hopeful that we're going to see just continued exponential improvement in our ability to see what is going on in the black box and also to measure the data of what happens when we do stuff. What happens as a result? Even if we don't have all the mechanisms or all the visibility, and that combination with the ability to share it may allow very substantial brain rewiring stuff that we didn't think about or didn't know about ahead of time. Like you said, we don't know.

Steve Fowkes: [00:35:00] That's right. There's another issue to. As the pace of discovery and knowledge and technology innovation increases, the pace of human adoption of that technology and political resistance to that technology doesn't change. You have a situation where the gap between what we can do and what the government will actively promote and facilitate is widening [00:35:30] in magnitude.

It's only in countries like the United States, where we are a permission-less technology society, where law basically says that anything that's not illegal is legal compared to other countries where only things that are legal are legal. We have the ability to tap into that technology, tap into that innovation as citizens in a way [00:36:00] that is not in any way facilitated by our political structures or our, let's say, medical institutions.

If you go to your doctor today, you're going to get any one of 100 different pieces of really bad advice based on conventional thinking because the medical system is incredibly non-innovative on a regulatory basis. The standard of care for example says that if a doctor does what ever other doctor does, you can't sue them and [00:36:30] any damage or malpractice that they cause is not actionable.

If a doctor becomes innovative and something bad happens, or even something that is just imagined to be bad, you can sue them. There's this chilling effect of regulatory and institutions and government that is not as bad in the United States as it is in other places of the world.

Dave Asprey: I'm with you there. I'm pretty sure I've probably broken a law enhancing [00:37:00] my biology. Not intentionally. The problem is that there are so many laws, and there is so many gray zones, where you can't even tell if you broke the law. It would be up to a committee of people to decide whether you did or you didn't.

That said, look at our problem with, quote, illegal drug use. The number of people who smoked pot before it was legal in their state is pretty large. I would

rather be living in a future where the number of people who enhance [00:37:30] their cognitive function and had more control of their flight-or-fight response, whether they use legal technologies, I don't care. It just doesn't matter.

At a certain point, you're like, okay, the risk is very low, whether it's a legal risk or a biological risk. The cost is effective, and whether I had permission or not, it's sort of like, I didn't have permission to speed, but I did that. I didn't have permission to smoke pot, but I did that. When I was under 21, I might have had a drink, and I did that. You can make [00:38:00] laws, but people aren't going to follow them if they're stupid. It's always been that way, so I'm hopeful.

Steve Fowkes: There's also things that are flat-out illegal and considered wrong that actually should be a matter of policy. For example, my relationship with alcohol was set when I was five years old, when my father was drinking a bourbon, and I asked him if I could taste it. He said yes. That was so awful [00:38:30] that I lost my interest in alcohol for the rest of my life.

Dave Asprey: Your father was wise.

Steve Fowkes: Not totally. You get that idea, but in this day and age, I think that sip of bourbon might be considered child abuse.

Dave Asprey: It's incredibly ridiculous. Where I grew up in New Mexico, it was actually legal for parents to give their kids alcohol if they wanted to, to let them have a sip. You weren't allowed to get your kids drunks. For me, it was like, "Sure, you can have a sip of my beer." Why would I want a sip of your beer? It's gross. There was [00:39:00] no interest in it, sort of like you were.

Then when I moved to California, I was 18, and said, "Hey, Dad. Order a beer for me with my tacos," and the place went nuts. The manager came over, "You can't do that." I'm like, "It's my parents. Come on, if they said I can drink something, whatever." I learned the laws were different here, but I think the same thing is going to happen for ...

Steve Fowkes: Yeah, laws are different. Cultures are different. In general, in our modern society, and I think this probably dates back to [00:39:30] the dawn of civilization that humans know more about what they don't like than what they do like. They're more likely to be intolerant of other people's decisions about things that they're awkward about for themselves. Ex-smokers tend to be very intolerant of non-ex-smokers.

Dave Asprey: It's a fair point. Let's talk about doping. This is another one of those things that drives me nuts. You get these 45-year-old male athletes, who are not allowed to use bio- [00:40:00] identical testosterone replacement. They're forced to recover like older people instead of being able to compete with younger people by keeping their hormone levels at not super human levels, but just at normal healthy levels.

We know very well that doping in sports works. Otherwise, they wouldn't be trying to ban it so much, but I look at all those doping technologies and say, "Some of those actually just apply to living a long time, or performing really well."

Steve Fowkes: You could also say the same thing about GHB, which is now [00:40:30] criminalized as a schedule one drug if it's not a particular brand. This is one of the most effective enhancers of stage three and stage four sleep. It's the only approved drug that specifically enhance stage three and stage four sleep, and yet it's so freaking expensive, and it's so unadaptable to ideal physiological dose.

You can't, for example, electrolyte [00:41:00] balance it, so that you can take a big dose and have the healing phases of sleep enhanced. You just can't do that in the United States. Anybody who is middle aged and older, who has some degree of sleep deprivation can't use GHB once a week, which would be one of the cheapest and most effective anti-aging therapies that exists in technology today.

Dave Asprey: Now, GHB is known as the date rape drug, but a lot of people listening probably don't understand what happened there. [00:41:30] GHB is naturally present in the human body, which is one of the reasons they shouldn't be able to ban it the way they have, but even worse they didn't actually ban GHB. GHB was available, and then they did press release about how it's now a date rape drug. They basically just pilloried the thing in the court of public opinion and decided to ban it without actually passing a law that way. It was an administrative action. This is one of those thing where I would take GHB several times a week to get more [00:42:00] sleep in less time, or at least better sleep in less time.

Steve Fowkes: Yeah, I would only use it once a week.

Dave Asprey: Only once a week? Okay, cool. I'm with you there. I don't know the exact dosing thing, but I would follow your instructions there because you've studied it way more than I have.

Steve Fowkes: There's a naivete to things that determines the growth hormone response. There are certain advantages to having stress, and exercise would be an example of stress that if you lift weights too frequently [00:42:30] you do damage to your tissues instead of building stronger muscles. The same could be said of growth hormone releasing agents.

If you're taking arginine or you're taking GHB to release growth hormone, if you take it every day, that growth hormone response will disappear because it's no longer a stress if you do it all the time. If you do it for a day, and then you wait six days, and then you do it again, your body is developing a certain naivete to it. When [00:43:00] you do it again, it's almost like you did it for the first time.

A lot of body builders and life extension people do rotation protocols, where they'll do a high dose of on amino acid, and then they'll do the next time they do it with a different amino acid, and then a third and a fourth. By the time they get back to that first one again, it's been a week or a month since they've taken it. Now, their bodies are responding to it as if they were naïve again.

Dave Asprey: That's pretty amazing. [00:43:30] You'd want to do that. It is available as a prescription drug, but it's something like \$1,000 a month, right? It funny enough got banned right before Ambien came on the market. There was no coincidence there whatsoever, right?

Steve Fowkes: There's all kinds of weird stuff about the banning of cyclamate before aspartame became available and stuff like that. When you look at the research that the FDA used to ban it, you can see it's obviously fraudulent. There's absolutely no case whatsoever for how they did it. Therefore, [00:44:00] it's some kind of economic motivated manipulation of the political system, given the fact that the politics, there's no feedback loop for efficiency or accountability within the political system. It's obvious that such things perpetuate.

Dave Asprey: It certainly looks like they do, given that politics is a black box to me anyway. I have no idea what's going on in there, but it doesn't make any sense to me. [00:44:30] Let's switch gears again, and let's talk about your favorite pharmaceutical smart drugs. What has your interests today?

Steve Fowkes: There's two of them. There's been two on my list, and they've been on my list for years. Piracetam, which is for me, it's a way of temporarily rewiring my brain. It's not actually rewiring my brain. All it's doing is facilitating a part of my brain that is [00:45:00] less than robust. The corpus callosum, which connects the left and right sides of my brain together is not very well developed. This is classic in men and it's classic in people with Down's syndrome.

It results in an impairment of verbal and language and writing and editing skills, which perversely I built my career on it. When I take [00:45:30] piracetam, I become multitasking. I'm able to do a better job of strategizing what I'm saying, and finishing up a conceptual development without getting distracted by iterations and side explanations and stuff like that.

As a lifestyle drug, it's a perfect thing for me because I can say, "Okay, today, I'm going to be editing," and so I take piracetam. Or I'm going to be on Dave's podcast, [00:46:00] I'm taking piracetam. That's what I'm drinking right now.

Dave Asprey: In a Subway cup?

Steve Fowkes: It's a layered cup with paper in between, so it's thermally insulated.

Dave Asprey: Got it. I see. You're keeping it cold. I understand what you're doing.

Steve Fowkes: I made my own thermal cup.

Dave Asprey: Your work, your writing about piracetam got me to try this stuff in about 1997. I started taking piracetam, and I was pissed off. I said, "This stuff doesn't work," [00:46:30] so after a week I quit taking it. I read this Steve Fowkes newsletter, and I spent \$1,200 on all this crap that took six weeks to get from Europe.

But after I quit taking it, after taking it every day for a week, I noticed, "Wait a minute. I'm reaching for words now." My thoughts aren't as good. It just felt so natural. It's like, I felt like myself when I'm on piracetam that I realized I did have an effect from it, but it was a subtle effect. I hadn't learned to monitor my own cognitive processing.

[00:47:00] I'm to the point now, I've been taking piracetam, or I like aniracetam better, pretty much every day. I've skipped some days here and there, but frequently for the last 20-something years. The stuff totally works for me, and it's not amp-y. It doesn't do anything like that, but my functioning is better on the stuff, and the risks are exceptionally low. What are the risks of piracetam?

Steve Fowkes: They are low. Some people do have [00:47:30] adverse reactions to it in a variety of different ways, and so it's not only just an issue of which racetam works best for you, and everybody makes that decision and is convinced that they're right, and everybody else is wrong. There are some people that just don't seem to respond well to them and even have negative effects from it.

It's just one of those things like clothing that you try it on and see if it fits and whether you like the cut and the shape and the clothing. You make that decision on your own values, [00:48:00] based on what you can see.

There's a little bit of a problem with piracetam because it feels so natural. It's not like caffeine where you notice something, and you feel different, and you can identify that differentness feeling with your performance. There's none of that with piracetam, and so you have to look at your performance independently. It's very difficult for people to do.

We can have plus or minus 10% or 20% or 30% change in our functionality, and it's just lost [00:48:30] in the noise of our everyday experience. It's very difficult for us to judge those things, and sometimes it's easier for other people to see that change. I could see that I was a better editor on piracetam, but what I didn't see, and my wife and my coworker saw was that I became multitasking. They noticed I became multitasking. I didn't see it for myself.

Dave Asprey: What's the other pharmaceutical that you like?

Steve Fowkes: deprenyl.

Dave Asprey: Yeah, good old deprenyl.

Steve Fowkes: Selegiline [00:49:00] is the US name for it. This is, in a sense, a miracle drug for middle aged and older people, who have any degree of apathy. That kind of disconnectedness with the world and the loss of drive and competitiveness and assertiveness and becoming passive about your life goes to the issue of dopaminergic tone, and we lose that as we age, and deprenyl gives it back.

I've had men, [00:49:30] they almost worship the ground I walk on because all of the sudden, they feel passionate again about their life, and they become a sexually much more interested, and connected to their relationships. It's just truly awesome.

Dave Asprey: This is ...

Steve Fowkes: It also extends lifespan.

Dave Asprey: That's a side benefit thing. This is a low-dose though. The antidepressant doses are like 50 or 100 milligrams, and you're taking like one or two milligrams, is my guess? [00:50:00] Maybe up to five?

Steve Fowkes: I'm at two at this point in time, which is less than half of what would be predicted from being 65 years old. I've always been dopaminergically dominant, like I've been cholinergically dominant. This is something that each person needs to find out. If you're going to take choline or acetylcholine or B5, if you're cholinergically dominant, your dose is going to be much lower than somebody who's cholinergically recessive.

This is part of the trying on your clothing [00:50:30] and looking in a mirror to see if the clothing fits and you like what you look like, and asking somebody else who you trust, "How do I look in this?" This is all part of that process of fit and sustainability. If you take a cholinergic agent, and you feel much smarter for two days, but after two weeks there's nothing there, then it's not sustainable even though you felt it. It's just not sustainable.

Dave Asprey: This [00:51:00] is one of my concerns. We have a bunch of people out there mixing stacks of piracetam and choline donors. A lot of people don't feel some of the things or some things don't work. They're counterindicated, so I'm very skeptical of those stacks. I see almost everything out there is just cranking on the choline donors, the acetylcholine and the Alpha-GPC and all these things.

I don't think that's going to work. I feel like when I go to the store and I want [00:51:30] to buy jeans, like everything out there is a skinny-cut jean right now. I'm like, look, this is because people are obviously either not exercising or they went vegan or something, but the stick-like leg thing doesn't work for me because I'm not built that way.

The idea of having a variety of things out there, where they don't all look the same and where you can say, "I don't want that effect, but I want some other

effects that are more broad spectrum." Things like increasing mitochondria to make your brain [00:52:00] work better, things like that, really are more broadly applicable, and then you've got to find what works for you versus what's supposed to work for everyone. The more number of ingredients you have, especially ones that are very highly specialized like these ones, the more risk you have of it not working, which is a funny thing going on in the world of smart drugs right now.

Steve Fowkes: It's been going on since the beginning days when I recognized that the way in which we age is not the same for each of the different neurotransmitter systems. [00:52:30] The norepinephrine and dopamine systems age relatively slowly, and so the degree to which you might under-respond or over-respond to phenylalanine or tyrosine or L-DOPA, it's going to change from year to year to a small degree, whereas cholinergics like DMAE are going to change to a huge degree.

A five-milligram dose in a child and a 50-milligram dose in a teenager and a 500-milligram dose in an adult, and a 5,000-milligram [00:53:00] dose in a centenarian, that's a massive change over time. That's orders of magnitude compared to dopamine, where if you're 45, maybe you're at one milligram, and you're maximum going to get to 10 milligrams at the end of your life.

Dave Asprey: I will tell you that when I first tried low-dose deprenyl, I took one milligram when I was about 26.

Steve Fowkes: Oh, geez.

Dave Asprey: I saw an anti-aging guy, a friend of ours, Dr. Miller, who was in Los Gatos for a long time. He [00:53:30] was like, "Dave, your brain is jacked. Basically, your hormones look like an old person. Your testosterone is lower than your mom's. Your thyroid is broken."

I tell you. I took deprenyl, and I got on thyroid, and just started to correct what was going on in my biology. deprenyl was one of my most precious things. It was like, wow, I got my life back from this stuff. I'd take it maybe once a week when I get around to it now because things work again, and I actually mean to take it more than that, but I already have ...

Steve Fowkes: You're no longer crippled?

Dave Asprey: Yeah. I have 150 supplements to [00:54:00] take every day. If there's time, I take a little squirt of l-deprenyl or not, but the idea for people listening to this, you said it makes you live longer, and it makes your brain work better, and it makes you like your life better. We're talking very low doses that don't have huge side effects either. These are the sorts of things I want in the public consciousness.

If you're walking around feeling like crap and apathetic, and you didn't have to, and advantaged inexpensive pharmaceutical in a case like this that might just make you live longer and not get Alzheimer's or something [00:54:30] like that, the moral case for taking it is high. The moral case for not taking it is low, but most people have never heard of l-deprenyl, so thanks for talking about it on the show.

Steve Fowkes: The worst situation it can be applied to, you take deprenyl and you run your dopamine up, and all of the sudden you become obsessive about certain kinds of ideas and thoughts and compulsive about certain behavior, and you bite our spouse's head off, you know. Okay. Maybe I've got a serotonin problem, and therefore [00:55:00] I need to look at inflammation and be motivated to look at your food and your digestion and your gut permeability and on and on and on. Certainly taking polyphenols might be included in that category of things.

If you do balance your dopamine and serotonin, most middle aged people who raise their dopamine are much happier with their lives. They enjoy their friends more. They enjoy vacations more. They enjoy sex more. They enjoy [00:55:30] physical activity more. They're more assertive in their relationships with people. That in and of itself, of knowing what you want and being assertive about getting it, and not just compromising and going with the flow and staying in the same dysfunctional relationship, that's a huge benefit to people who are otherwise in a rut.

Dave Asprey: Very well put. [00:56:00] Thanks for one of the first guys to write about that as well, and one of the people who got me to make this a part of my life. I've got a question for you, Steve. You've been consistently ahead of the curve for 30-plus years, throughout your life. You do this, and you prioritize things differently. You think differently, and what I want to know is, if someone came to you tomorrow and they said, "Steve, I want to perform better at everything I do as a human being," what are the three [00:56:30] most important pieces of advice you'd have for me? What are the things that matter most for people who maybe want to change the game as much as you have?

Steve Fowkes: It's hard to say that there's a general answer to that question because on some level, let's just say, I could add to that question if you're a human being, as opposed to a dog or a cat or a horse, is that it would be normalizing your collagen health. Humans have heart disease, ease of bruising, and concussion injuries and things [00:57:00] like that because of the fact that we don't the enzymatic machinery for making vitamin C. We have to eat it, and the amount that a dog or a cat would produce for somebody our size would be in the realm of 10 to 20 grams a day. The government says we only need 45 milligrams.

We're dealing with a vitamin C level that's less than 1% of what every other mammal in our world [00:57:30] lives with. That's a huge compromise that we make as human beings that at this point in time costs maybe \$0.10 a day.

Dave Asprey: For vitamin C?

Steve Fowkes: Yeah, \$0.10 a day, and what can you look at in your life that you consider a valuable investment that you could describe at \$0.10 a day? Auto insurance, food, vacations, nothing is that cheap. Alcohol. It's never that cheap.

Dave Asprey: [00:58:00] Number one would be take your vitamin C?

Steve Fowkes: That's how I'd answer that question.

Dave Asprey: Number one thing, of all the things that matter most in your life is vitamin C?

Steve Fowkes: Just being a human.

Dave Asprey: There you go.

Steve Fowkes: It really sticks out because we are human beings and not other mammals. In terms of individuals, how old are you? If you're young, it's going to be different than if you're middle aged, or if you're a senior. That would also answer that question differently. If you're male versus female, [00:58:30] answer that question differently. If you have traumas in your life, in terms of your autonomic regulation relating to perception of safety, if there's a trauma that plugs you in about a certain idea or concept or opportunity, that's going to limit your life.

Desensitizing yourself to that with, let's say, with [inaudible 00:58:52] therapy or heart rate variability biofeedback therapy, that might be the magic thing for you to make you more adventurous [00:59:00] in the world and take more risks. If you look at people who are seniors, and you to them within 10 years of their deathbed, and ask them, "What's your greatest regret?" The number one answer is usually, "I didn't take enough risks."

Dave Asprey: Beautiful. That was three. Take more risks. Take your vitamin C to get your collagen levels up, and the middle one's deal with trauma.

Steve Fowkes: Yeah, it's kind of like [00:59:30] that we are imprisoned on some level by our subconscious glitches, and that this is all reprogrammable. You can learn to deal with things, learn to go back and resolve your traumas, learn to forgive yourself for mistakes that you've made, learn to forgive other people for the way they've treated you. Forgiveness on some level is a burden that we carry that hurts us, and not the person that we can't forgive.

Dave Asprey: Such wisdom. That stuff is right at the core of the [01:00:00] 40 Years of Zen work that I do. It's forgiveness with a computer telling you when you tell yourself you've forgiven and you haven't? Sorry. You're not done yet.

Steve Fowkes: You're lying.

Dave Asprey: Right. My powers of self-deceit are legion. We'll put it that way.

Steve Fowkes: Forgiveness isn't about pretending to forgive.

Dave Asprey: Very well put. Steve, it's always a pleasure to get to spend time with you whenever we get a rare meal together or something, and even more fun to interview you on this show. The last time I interviewed you, it was episode, I think, 94 and 95. [01:00:30] It's been too long.

Thank you for all the work you've done. Thanks for your wisdom, and thanks for being on Bulletproof Radio. Where can people find out more about your latest stuff?

Steve Fowkes: Just Google me. Any search engine. Just plug my name in, and if you want to qualify it in some way like red light or smart drugs or anti-aging or Down's syndrome or whatever, you just add that after my name, and it will zero in on whatever you want.

Dave Asprey: You've been creating content for 30-plus years, and [01:01:00] you're easy to find. I'm truly grateful, Steve, so I'm looking forward to seeing you again soon, and thanks again.

Steve Fowkes: You're welcome.

Dave Asprey: If you liked today's episode, you know what to do. Go to [Bulletproof.com/itunes](https://bulletproof.com/itunes), which will take you straight to iTunes. You can just leave a review. You just heard a powerful interview with Steve Fowkes, who is a luminary in the world of cognitive enhancement and anti-aging and a bunch of other stuff. I've certainly learned a lot from him, and I hope you did too.