

The Human Upgrade: Episode 1113

Dave Asprey: [00:00:00] You're listening to The Human Upgrade with Dave Asprey. And today is a long-awaited show with none other than Bryan Johnson. I've been a remote fan of Bryan's work, not in the field of longevity, which is something I think that he's been more public with in the last couple of years, but because of his neuroscience background.

So Bryan started a company called Kernel that has what I would say is the most comprehensive way of looking at the human brain ever, because he took his tech disruptor brain and said, why doesn't someone do this the right way? So first, Bryan, hats off for your work with Kernel. And then let's talk about aging, and brains, and stuff like that.

Bryan Johnson: [00:00:42] Thank you, Dave. Very few people are aware of Kernel or that neurotech is actually useful. In a similar way where the blood glucose monitors made it very easy to put one on the back of your arm and understand where your levels are at, and then understand how food affects that, we're trying to do the same for the brain, make it easy for anyone to figure out what happens to my brain when, and to have biomarkers that help make decisions on health and wellness.

Dave Asprey: [00:01:10] It's a shift from when we first talked about Kernel, where you were saying, I want to know how the brain works so that we can figure out how to AI make better. It seems like you shifted a little bit more into the brain wellness and brain as feedback on your environment, more of a biohacking approach.

Bryan Johnson: [00:01:27] Yeah. The big dream is still that. That which we can measure, we improve, and our brain is one of the remaining things about our existence that remains difficult to measure. So with more measurement, we can then create a closed loop feedback to improve ourselves with AI. So that's still the ultimate objective.

In the meantime, having it be practically relevant to daily life of making better health and wellness decisions, useful for pharma, for drug development, for other indications like cognitive decline and depression, mental health, if we can be useful in those areas, then it's a win.

Dave Asprey: [00:02:02] It is a win. And ultimately, who cares about having a body that lives a long time if your brain's not in there and doing good work? Even on the AI side of things, it feels like Jeff Hawkins, an old three-cam US robotics guy, the guy who invented the handwriting

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analysis for the first handheld called a Palm Pilot way before your phone. I used to work with that company when Jeff was there.

He's written a couple of books that probably do explain how the brain really is architected and talks about AI, so feel like we're making more progress theoretically. And then you're doing some visual visualization stuff that almost no one knows about, but think you deserve credit for that because you spent something like \$80 million of your own money to figure out how the brain works. So kudos, my friend. That's awesome.

Bryan Johnson: [00:02:45] Thank you. Yeah. Boy was that difficult. It was my first time doing a deep tech startup, and we spent two years as a team looking at every possible modality that we could use to interface with the brain. We just started with the laws of physics. How could you potentially measure what was happening in the brain?

We spent two years investigating every single approach. We acquired prototype systems. We stood them up internally, acquired data, and then we mapped each one to, is this commercializable? What do you need to do? Do you need to build custom chips? If so, who's the fab? Can you build them? Do they have the scale, the energy requirements? And then we spent six years building it. We had a team of experts across 12 different disciplines, and we built it ground up. All the experts in the field didn't think this was possible, and we pulled it off.

Dave Asprey: [00:03:34] They never do. I've been theorizing. We had a few conversations back and forth, and I'd been fantasizing about doing something called HEG feedback, or MEG feedback. And HEG, I actually used to sell a system like that years ago, but you put it all together in an elegant way.

And so if people are skeptical of your commitment to understanding biology, I think that you already proved yourself with Kernel, even if maybe you didn't hire a good PR team to talk about it. But I just think it's a worthy effort in furthering our understanding of being human beings and what's really going on in there.

Bryan Johnson: [00:04:10] Even now, I've tried to speak about Kernel several times about measuring the brain and why it's potentially useful, and interesting, and exciting. No one cares. I just cannot get any pickup on that company. I did a YouTube video with a bunch of retirees, 70s, where they're trying to-- that moment of life where you know that the horizon is potentially

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threatening, and you savor every moment. And even that, it's been very, very hard to generate interest in a technology. It's not intuitive yet. People don't know why they would want to measure their brains.

Dave Asprey: [00:04:51] I've never understood that as an early guy in the nootropics movement. You know about my 40 Years of Zen because I wanted to get a Kernel so I can use it to validate some of the work we're doing there. So I think I sent you an email about that two years ago. And you're like, we're not doing that-- maybe someday. But I do just, as a genuine biohacker to another, want to extend my respect for that.

Bryan Johnson: [00:05:18] Thank you very much.

Dave Asprey: [00:05:19] Yeah. You're welcome. Now let's talk about the biohacker thing. Professional rejuvenation athlete versus biohacker. What's the difference?

Bryan Johnson: [00:05:34] When I first started doing this, I saw that people were struggling to put me into a category that was intuitive to them. And so they would reach out in their mind and find a frame that they had. It was like, is this a biohacker? Is this a health enthusiast? Is this a blank and blank? And didn't think that any of those things necessarily captured what we were trying to do.

This was an endeavor trying to map the next phase of human evolution. And like all good structures in human organization, competition breeds engagement. I did this for two years. Nobody paid attention. And then it went viral. And then people freaked out, not understanding why I was doing this, what I'm doing.

But the disconnect was if you observe an athlete like LeBron James and you see him taking care of his body, and sleeping well, and doing these things, no one's going crazy over LeBron James's protocol. They respect him for his play on the court. And so I thought the thing to do would be to reframe this endeavor as an athlete, because people respect performance on the field, and what you do to achieve that is respected. Whereas I was being vilified because they didn't have an endpoint to connect it to.

Dave Asprey: [00:06:58] Welcome to the club, man. Saying that you're going to reverse aging or you're going to live longer than you're supposed to, it really triggers a lot of muggles. And I

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eventually got to the point where I think it's a game. Like, oh, does it trigger you that I'm planning to live longer than you are? That's okay. You'll be dead before I will. There's just no rational argument for them. And I just realize they're not the people I'm trying to reach, the people who are triggered.

But I have to ask you this. And this is a real thing. It took me a long time. Joe Rogan came after me for a while in a commercially related thing. I took a lot of hits in making biohacking, way more than most people will ever really comprehend. And eventually, I got to the point of amusement, but it was only after a lot of pain. And that kind of pain is not good for your longevity. It's actually a negative.

You're getting some criticism, and you're also getting a lot of like, what the heck is this guy doing? And it's usually vocal critics, a small percent. How do you keep all the critics from making you old?

Bryan Johnson: [00:08:07] The response is algorithmic. It's mathematically predictable. And so if you, in any given time over the past couple thousand years, take norms of human behavior and plot a behavior that is outside two standard deviations from norm, you get a biochemical reaction and people responding to it. It's the same process that's been happening for thousands of years.

And so that's true for anything, is that, basically, responses are people identifying outside the norm thinking behavior ideas. Yeah. Actually, I have zero emotional attachment to it. I view it with amusement, and I view it as predictable as the sun rising, is that we all experience our consciousness as unique and original, but it's not. It's been playing on this loop for a long, long time. And so realizing that it really means nothing to me at all. It's fun.

Dave Asprey: [00:09:15] Are you on the spectrum?

Bryan Johnson: [00:09:20] Did that question provoke the question? That answer provoked the question?

Dave Asprey: [00:09:25] It might have had a few little signals in it.

Bryan Johnson: [00:09:30] That question has embedded within it assumptions about what is normal and not normal, which then maps to what is good versus bad versus what is respectable, which is unrespectable or trustworthy, untrustworthy.

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Dave Asprey: [00:09:50] Mm. Are you sure, or is that your own mapping? By the way, I had Asperger's syndrome for a long time, and I fixed it. I reversed it and kept some of the aspects of it that were useful. But I have no judgment about them. A lot of my friends are on the spectrum. So it's not about are you good or bad? It's a question of being neurotypical or average, which would be the same as normal, or possibly above average, which would be abnormal.

Bryan Johnson: [00:10:13] Yeah, yeah. And I wasn't suggesting that your statement was suggesting that. I'm saying, in society, generally, in a colloquial sense, when people say that there's baggage associated with it, it doesn't come with a neutral place of assessment. And so that's all I'm saying.

Dave Asprey: [00:10:30] Okay. Because some people are judgy about that. Got it.

Bryan Johnson: [00:10:32] Yeah, yeah. It's just like people use that framework sometimes in a way to be derogatory, or as an insult, or to somehow ostracize someone from a community. And I frame it like this. I've read hundreds of biographies, and when I read about people in their time and place, the patterns are so familiar that there's somebody that identifies something that is unique and actually the future, and in response to that, they get the predictable outrage and crazy assessments and other things.

And if my frame of thinking is, I genuinely would rather be respected by people in the 25th century than I would to be respected right now. Because, by definition, the majority of everyone who lives right now is living in the past, living the ideas of dead people. Now, we think we're future forward. We think we're on the cutting-edge. The majority of our values, ethics, norms, ideas, understandings really are of dead people.

And that's been true for all of humanity. And you look back, and you say, in those areas, the future was always present. And a very small sliver of society could identify it, but it was a very small sliver. And sometimes those people weren't vindicated for 100 years or 200 years. And that's why we can look back at the 16th century with this cold, detached, objective view and say it was so clear that leeching was not a good idea as a way-- bloodletting was not the right thing for blankety blank.

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So that's why I say right now, I assume by default, which is a correct assumption, that the majority of that which is easily accessible to me in thought and action is dated, and I need to search relentlessly for the future because it's hiding, and it's very hard to see.

Dave Asprey: [00:12:30] Mm. So that sounds like a yes.

Bryan Johnson: [00:12:36] That's good.

Dave Asprey: [00:12:37] So you've looked at your brain. I've observed your interactions with reality, and I actually can't tell. So now this is me being judgmental, but not in a good or bad way, but just in a neurological assessment sort of way. And it's clear to me. And if you don't like this part, I'm even happy to delete it, whatever.

But it's clear to me, because you've talked about it, that you have some childhood trauma stuff that will affect the rationality we all do. I've been open about mine as well, so no judgment there at all. And you also have like a very active, rational brain. And sometimes, if you have the neurological wiring that comes from neuroinflammation when you're young that forces your brain to be hyper efficient at some things, which is what puts you in the direction of ADHD or being on the spectrum, you'll present that way.

And other times you'll just do that because there was too much chaotic emotion in the brain that wastes electricity, and the brain's like, the easiest thing for me to do to be highly functional in the world is just to not worry about all that stuff and just rely on rationality versus interoception.

Do either one of those seem like a good assessment, or are you just an alien or some other thing I haven't thought of here, if you don't mind me asking? It's a pretty personal question, but I'm trying to figure out what makes you tick.

Bryan Johnson: [00:13:57] Everything is open for discussion, so happy to go wherever you want. I find Robert Sapolsky's framework that he outlines in his new book, *Determined*, persuasive, where he articulates that in any given moment, we are influenced by millions of factors that date back thousands of years to two minutes and 10 minutes, and that we are, for the most part, oblivious to the forces that are upon us in any given moment that determine what we do, including childhood trauma, including my hormones, including my sleep levels last night.

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And so I really enjoy this quote by Edward Murrow. It's my favorite quote ever. Those who are not confused don't really understand what's going on.

Dave Asprey: [00:14:47] That's a great quote. I love that.

Bryan Johnson: [00:14:49] Can I whip up a story of my self-assessment and do some psychoanalysis?

Dave Asprey: [00:14:54] Please.

Bryan Johnson: [00:14:54] I'm just saying, could I? It would just be, in my estimation, pointless because of my complete obliviousness to what is really going on that invites my behavior, and I wouldn't even begin to expect it. So I think it's actually a more honest answer to say, I have no idea. I would rather refer to a methodical framework like Sapolsky's, and say, what are the factors? What weights do they carry? What is influencing my behavior? Than I would to try to endeavor to answer the question, being as naive as I am, with all those variables.

Dave Asprey: [00:15:31] Mm. I hear you. It sounds like you're not going to answer it. But I will tell you, your media training is really good, so nice work.

Bryan Johnson: [00:15:45] Thanks.

Dave Asprey: [00:15:47] By the way, guys, if you're listening to this, the media training, Bryan and I have both been CEOs of sizable companies, and we've both had PR companies tell us exactly how to handle-- this wasn't a hostile question, but it was a difficult and funny question. So nice ninja moves. I just got to say.

Bryan Johnson: [00:16:02] When I was doing my first media training, it was at Braintree when I had never engaged with press before. And there was one thing. They probably told me many things. I don't remember them. There was one thing I remember. They said, you don't need to answer the question.

Dave Asprey: [00:16:20] Yes.

Bryan Johnson: [00:16:21] You're there to explain what you want to explain. You're not there to answer the questions. And so the training was, your objective is to take their question and say yes and, and then figure out a way to answer the question in the way you want to talk about it. And

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that was such a significant mind shift for me, because I had assumed in that situation that I was present to answer the reporter's question.

Now, of course, when you hear this happening with politicians and they ask a question of like, we want to know an answer to this thing, and the politician says something different, you're like, oh my God, just please answer the question because I don't want to hear your bullshit. So there's a really fine line that you need to be honest. You need to be transparent. You need to be to create the rapport with everyone so that what you're doing engenders trust and community.

Also not being trapped because the reporter clearly has agendas on making sharp edges and spinning a narrative they want. So it's a really delicate balancing act. You can never do so in a way that creates distrust. That's a suicide mission.

Dave Asprey: [00:17:34] Never create distrust. And in the modern world too, you can just receive a question and just mumble a bunch of words that don't make any sense, and they still think you're suitable to be a leader. But this is not a comment about any political party versus another. I think that's true of all political parties. So there's that. All right. Who's your favorite Star Trek character?

Bryan Johnson: [00:17:56] I've never watched Star Trek.

Dave Asprey: [00:17:58] Are you kidding me? You're a nerd. I don't believe you. Okay, Star Wars then? Come on.

Bryan Johnson: [00:18:05] What categorizes me as a nerd?

Dave Asprey: [00:18:14] Is that a real question?

Bryan Johnson: [00:18:15] Yeah.

Dave Asprey: [00:18:17] Let's just take this one little example. You spend \$80 million studying the human brain and going into-- you've answered 5,000 questions of the 20 already that say nerd, nerd, nerd, which is a compliment. I'm a nerd too. That is not at all derogatory unless you're still from the '80s, which we're not.

Bryan Johnson: [00:18:35] Yeah. Okay, why would neuroscience bundle with Star Trek?

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Dave Asprey: [00:18:41] Geez. I guess you've never seen Star Trek. You wouldn't know. But there's whole times when they put on virtual reality helmets. They have the holodeck. There's a whole thing with Wesley Crusher, and these things that take over your brain with little lasers going into your eyes. I'm telling you, it's up your alley.

By the way, Bryan and I have discussed science fiction over text or email a couple of times, so I know he's into some sci-fi. I was just assuming that you would have at least made fun of one Star Trek character at some point.

Bryan Johnson: [00:19:10] No, this is why I choose to not answer questions about myself that get me into territory where I may be in trouble making assumptions with bundling, or certain psychoanalyses, or other things. I grew up where Star Trek was not a part of my life or my culture.

Dave Asprey: [00:19:30] Oh, of course.

Bryan Johnson: [00:19:32] And I got to a certain age in life, and I was past it, and I was never drawn into it. And so no, I have major cultural blind spots. I find myself in conversation being clueless more often than I do find myself in the swing of things. And I'm oftentimes very surprised by my level of ignorance of cultural things.

Dave Asprey: [00:19:56] That makes so much sense. So let me ask you this then. How often are you lonely?

Bryan Johnson: [00:20:01] I've never experienced the feeling of loneliness.

Dave Asprey: [00:20:06] Do you know how to recognize it if you did experience it?

Bryan Johnson: [00:20:12] I understand it as an emotion that you want to be with others, that basically, your being with self is inferior to being with others, and that it's a need. I don't know if I feel that emotion as something that drives me. I appreciate others, I appreciate community, and I appreciate friendships and relationships, but it's not something that compels me to action in a way that like, I have a need. It's not a need present like hunger, where I feel like I'm driven to acquire food to satiate myself.

Dave Asprey: [00:20:50] Got it. Yeah. For many people, loneliness is expressed as some sort of diffused pain that is alleviated by spending time with someone that they trust and care about.

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Bryan Johnson: [00:21:02] That's right.

Dave Asprey: [00:21:03] Yeah, yeah. And so you don't experience that. It's interesting. For me, until I was about 30 and did a 10-day really hard personal development thing, I didn't know how to map out anything other than happy and angry. Those were my two settings. And then I found that there were nuances, and there was a signal in all of the noise that I had not learned when I was young because I was on the spectrum.

The reason I'm asking you that is there's a Harvard study for longevity that shows one of the biggest things that determines how long you're going to live is how many close friendships you have when you're 50 and what your community is for the entire length of your life. And I look at community and relationships as fundamental variables for longevity.

And you've talked about sleep. By the way, I've slept with brain monitors on my head or somewhere else on my body for 15 years. Victoria's Secret doesn't like either one of us. But you've talked about how no one's going to sleep in your bed and things like that. So what's your deal there with longevity versus relationships versus community?

Bryan Johnson: [00:22:10] Growing up, my existence was community. That's just how reality was in this deeply religious world. You just were the community. And it was lovely. There are some drawbacks to that environment, but generally speaking, it was beautiful. We were in a neighborhood where we were generally welcomed to walk into someone's house unannounced. It was that familiar, and cozy, and fun, and nice, and it was beautiful.

And I'm in touch with many of those people today, and it's wonderful. Then I got married and had kids, and I was an entrepreneur working full-time. We were still deeply involved in our religious community, so still having deep friendships, but the objective of my life really became grinding as an entrepreneur.

You're so fixated on the objective of building a startup that everything else just moves to the side. And so you have kids, you've got a relationship, and you've got your work, and that's it. And then post selling Braintree Venmo, it was this new opening of my reality of what is reality, what is life? And I got a divorce and restructured my whole life.

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And so I guess the concept of community has really changed throughout my life. I now have more and deeper friendships than I have in my entire life. I think I figured out how to build friendships. I guess did that as a kid, when it's really easy. As an adult, it's hard. And so as an adult, how do you get to a place where, as friends, you can talk about everything, and you can go to all the dark places and the sunny places, and you can be there for each other?

And so I guess maybe reflecting on this question, this is how I spend a majority of my time with my children, is talking to them about how to build lifelong relationships. And you have to invest very heavily in them. They don't come easy, and it takes a lot of devotion. But yeah, I wish I would have received some tutoring in my younger years of how to create lifelong, enduring friendships. Yeah, I agree with you. It's important. It's a skill set that is not obvious.

Dave Asprey: [00:24:25] I never knew it was important when I was younger. No one ever told me, or maybe they did, and I just wasn't listening, which is often as it is when you're young, being the father of a teenage boy. I definitely understand that-- even teenage daughter. Sometimes they just don't hear what you say. But yeah, I invest a lot in those long-term relationships now, but I probably should have done that in my 20s. Just didn't know it was on the to-do list.

Bryan Johnson: [00:24:49] One of my friends, he's been doing annual trips with the same five guys for the past 25 years.

Dave Asprey: [00:24:57] Isn't that the coolest thing ever? I've never done that. But every time I hear it, I'm like, wow, what would that be like?

Bryan Johnson: [00:25:02] And that's really the value of building these relationships, is oftentimes we come together because we share an interest in a given thing, whether it's a professional endeavor, or we're neighbors, or whatever. But there's few things that supplant longevity and the deep familiarity of those relationships, where you've all been through different versions of yourselves.

And that's what I've really been trying to do, is I try to be in situations where I can accelerate that development so that my friends and I feel that familiarity where we do things to create the attributes that contribute to friendships, like shared trauma. How are we going to have shared

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trauma? So we bond in unique ways, but it's how to achieve that familiarity that you otherwise gain that is so satisfying that we all experience and love.

Dave Asprey: [00:25:45] Mm. Yeah, it's the shared trauma, shared suffering, and just seeing that people care about you, and love you, and respect you even when you're not at your best. And that takes time.

Bryan Johnson: [00:25:59] Yeah. You go to them when you're not your best. That's the place you go. Yeah.

Dave Asprey: [00:26:05] Almost every entrepreneur who's been through my neurofeedback program, and we go really deep on personal dev stuff, like you would if it was some plant medicine thing or something. And every one of them has experienced sometimes profound loneliness. It's part of being a guy in the modern world. But I think entrepreneurs experience it even more because when you're the leader of the company, you can say they're all friends, but when you can fire all of your friends.

There's a power dynamic where there's closeness, and there's friends, but that's always in there. And then, especially if you put your time into your kids and your companies, sometimes your relationships that are neither one of those take a back seat for at least the first 10 years of your kid's life. So did you go through some of that?

Bryan Johnson: [00:26:50] I have spoken to others about this, and in those moments, I find sinking into a book as equally enjoyable, if not more so, than even many of my friendships. In the moment where I have free time to do something, I find there's so many options that are at my disposal. I don't feel the loneliness.

And so a friend can feel that. A book can fill it. Learning game can do it. And so I guess there's so many things that bring me that fulfillment that I don't feel the loneliness and, like you're saying, the pain that I need to seek out another human.

Dave Asprey: [00:27:31] Interesting. So even as a CEO with young kids and all, it never was a thing. Very, very interesting. And thanks for talking about that. It's one of those things where there aren't that many people who've built sizable companies who are willing to talk about that stuff. And I think it's a major aspect of aging.

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If you have an emotional, or psychological, or even spiritual pain that is unaddressed, over time, I think it affects your cell immunity, your cell danger response, your hormone levels, your cytokines, whole networks of signaling that are invisible to us unless you have really good data, which is why I'm so interested in them. So thanks for going there with me. And we got to talk about some more hands on longevity and biohacking. You ready?

Bryan Johnson: [00:28:24] Ready.

Dave Asprey: [00:28:25] All right. First up, I do about 150 pills a day, and it varies depending on the day and-- oh shoot, I just realized this is totally not planned, but I was supposed to take these with a steak I had at lunch and I forgot, but this is my morning thing. And now I'm kicking myself because my aniracetam is in here that makes my memory IO increase, but, oh well. I'll take those, not on the air. How many pills do you swallow at one time?

Bryan Johnson: [00:29:01] Probably 15.

Dave Asprey: [00:29:03] Okay. Got it. So you can swallow a lot or a little, and I think anyone who's into longevity should know how to do it. I once teased Liver King about it, but I'm doing-- I don't know if you guys can see that. That's a handful, but you just-- when there's one stuck to the roof of your mouth, that just pisses me off. So there's one left.

Bryan Johnson: [00:29:35] That's such a weird flex.

Dave Asprey: [00:29:40] Liver King was like, I swallow 20. Anyone who swallows more pills than me is more manly. So I'm like, I see your 20 and raise you 10. And it was a joke because it doesn't matter how many pills you can swallow other than you don't want to over hydrate.

Bryan Johnson: [00:29:55] I need to hang out with him.

Dave Asprey: [00:29:56] Yeah. I want to hang out with him too. He's just an interesting guy. And it's funny because I'm happy that he talked about peptides, and testosterone, and all that stuff. If you want control of your biology, use all the tools, man. There's no rules one way or the other in my book. I feel like it's a good idea to talk about it, which is why I like what you're doing.

Bryan Johnson: [00:30:16] I have no interest in his opinion on anything health-related. I'm interested that his name is Brian Johnson. He's my same age, and we're in a parallel universe.

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Dave Asprey: [00:30:25] Oh my gosh, I never even thought of that. I want to know what drives the psychology on it. He'd be fun to unpack, but that's--

Bryan Johnson: [00:30:33] I want to see if he's me in a parallel universe.

Dave Asprey: [00:30:35] Knowing your tastes in science fiction, absolutely. You guys are like mirror images, yin and yang, or something. That's funny. Okay, same name too. How could this be? I had forgotten that was his real name. All right, so we've established you guys swallow a lot of pills.

I've been really hesitant to just say, guys, here's my list of pills. And people have been asking me for years. And what I do is talk about each of the compounds I take, and I talk about the amounts and reasons you'd want to take it. But I used to weigh 300 pounds. I have a history of autoimmunity. I used to have Asperger's syndrome. I'm on an aggressive longevity track. And I have huge amounts of data.

So if most of the people listening in the Upgrade Collective-- this is our live audience-- who's just listening in and feeding me extra questions and stuff, if any of them tried to take exactly what I do, they would probably fill their pants. So don't want to cause harm by saying, here's what to do.

My numbers aren't the same as yours, but they're good on the age reversal thing, depending on all the different metrics. But kudos. You've made a really big swing in a really good amount of time, and don't want to do that. Let's hold up our TruAge scores and poke fingers because it's ridiculous, but we'll just say we're both doing really good.

And I'm concerned that if people did everything I did, they wouldn't get my results. And you've said very cleanly with Blueprint, hey, this is one way. There are probably other ways. This is how I'm doing it. But you're publishing the whole protocol. How do you account for the bio-individuality here? Because I'm genuinely struggling with this. How do I provide good advice for people who aren't me?

Bryan Johnson: [00:32:23] One of the fastest ways to improvement is trial and error. And the more people hammering away on a given problem, the faster the community moves. And that's

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been our approach. Let me say almost all of our protocols are based on population level studies, not my individual measurement.

Dave Asprey: [00:32:55] Right.

Bryan Johnson: [00:32:56] Yeah. So it's almost as equally applicable to others. Now, there's some qualifications that's more true for someone in their 40s and someone who's in their teens. Although there's still some overlap. My son does a modified version of Blueprint, but he still does a very similar profile.

For example, he's not on metformin, or rapamycin, or acarbose, or the more powerful things you do as you get into elevated levels of age. Yeah, I guess with Blueprint-- health and wellness are simply a stepping stone into the next step of dreaming of what it means to be human. And I really view it as a means. It's not the end. Let's see if we can dispense off the drama around what we each do, and stabilize that, and move our brains to this next level of thinking.

To me, it's not where I want to hang out. This should just be automated. It should just be fixed. We should have computational intelligence doing it. Humans should not be in the middle of this thing debating this and that. It's not our domain. We're not going to win. Computational intelligence is going to be superior to it, so the faster we can get there. So that's really my objective is trying to get to the stage where computational intelligence is doing the hard work for us, and we move on to other things.

Dave Asprey: [00:34:20] We're both aligned with that. It has to do the intelligence, and then you've got to measure the results. And if it's not working, change. And I'm doing that especially around exercise and the physical stuff at one of my companies, Upgrade Labs, because I'm actually a little bit bitter about the amount of time that I spent at the gym in my early 20s trying to lose weight that didn't work. 702 hours on the low-calorie diet, and I still had a 46-inch waist when I was done.

And now that we have data, and there's some population-level stuff, but it's usually smaller studies that are done at universities where you control enough variables to learn something, you go, oh, I could have gotten the results I wanted probably in 50 hours instead of 700 hours, if I just would have done the right thing at the right time and all of that.

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So I think we're going to find all kinds of rich stuff in our data, whether it's medical data, whether it's nutritional data, whether it's longevity data, whether it's movement data, all that stuff is coming in. I don't want to waste any time on all that stuff, but I will to the extent it's necessary. What's your favorite type of exercise for fun versus for results?

Bryan Johnson: [00:35:37] Oh, it's all fun. The hour I work out every day is my favorite moment of the day.

Dave Asprey: [00:35:45] No kidding.

Bryan Johnson: [00:35:46] Oh, I absolutely love it. I have my best ideas working out.

Dave Asprey: [00:35:54] Mm. So you're getting lots of blood flow in your brain for that.

Bryan Johnson: [00:35:59] Exactly. And in particular, when I'm doing cardiovascular activity, yeah, I'm just in a heightened state, and I feel increased clarity. I find that I'm more brave and courageous in those moments than when I'm not. And so oftentimes I will make decisions and commitments to myself when exercising that I am going to do a given thing so that when I settle down, I would second-guess and be like, are you sure, Bryan? That kind of sounds a little crazy. We sure we want to do that?

And I've learned to trust that when I'm in those states, I am my best self, and I do make decisions that are, on the weighted average, better than when I'm not. And so I find it to be a great source of joy. My body feels limber and flexible, and it feels great all day. If I miss it, my body feels more stiff. But yeah, it's really a favorite moment of mine.

Dave Asprey: [00:37:01] Now, if the one hour a day of exercise is your favorite time, do you have a girlfriend?

Bryan Johnson: [00:37:09] I'll say one more thing on the exercise, then I'll do the girlfriend thing. I think my favorite exercise is there's a trail that my son and I run here in Los Angeles. It's 3.2 miles. It's a 1,000ft incline, and we run it like wild men. We take ourselves to the absolute max. And it is so much fun for he and I to do that together. It's our experience. We both put on our music and we're just in it. And we're pushing each other. Our best time is 33 minutes, and when we get when we arrive, we're just absolutely smoked.

Dave Asprey: [00:37:48] Wow.

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Bryan Johnson: [00:37:49] Yeah. But it's trail running, so you have to be careful. There's sharp rocks. There's a cliff. I also love the irony. I'm the don't die guy, and I'm doing this thing that has a risk profile. But for my son and me, it's just exquisite. We love doing that together so much. Yeah.

Dave Asprey: [00:38:12] I love that. And in fact, one of my brands is called Danger. And the subtext is, who knows what you might do? Because if you're unwilling to take any risk, life isn't worth it. And you won't start a company. You won't ask the person-- you don't progress unless you're willing to take a risk that's worth it. In this case, you're trading joy for some nominal risk, and it's like it's just a smart move. And because you're a free person, you're willing and able to do that, which I totally think is a good call because a stale and boring life that's safe isn't probably going to make you live a long time either.

Bryan Johnson: [00:38:49] Yeah.

Dave Asprey: [00:38:51] So back to the girlfriend thing. How important is that for longevity?

Bryan Johnson: [00:38:57] Yeah, I am dating, and I think I'd like to be in a relationship. I think, statistically speaking, it's highly improbable that I'm going to find someone that's compatible with me because the cultural norms surrounding relationships are basically everything that I don't do.

And so if live in the year 2023 and you're a female, you have what are considered to be normal expectations of what a partner would be, how much time they spend with you, what kinds of things you do, what kinds of things you talk about. There's these general rules, and I basically break all of them.

And so I don't deliver on the cultural norms which then is challenging for somebody to put their head around it. And so yeah, I'm interested. I just don't know if I would find someone who I think would basically be in synchrony with me on these things.

Dave Asprey: [00:40:03] I feel like you should come to the Biohacking Conference. Put on a fake beard or something so no one knows who you are. There's a lot of single women and men who come there, and none of them follow cultural norms as far as I can tell. And I'm like you. I

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got consciously uncoupled a couple of years ago. I'm dating. I have my own set of expectations that have nothing to do with the standard template.

And I'm not having a hard time dating. I'm maybe having a hard time with people who want to move more quickly than I want to move. But yeah, I feel like, to at least a lot of the people I know, what you're perceiving as the lack of cultural norms is actually attractive to them. Have you been a Bay Area person, or have you always been in LA, in Braintree, and all that?

Bryan Johnson: [00:40:58] Oh, I've been Chicago, New York, San Francisco, LA.

Dave Asprey: [00:41:01] Okay. Because the Bay Area tech crowd that I was a part of for a long time, let's just say there's a lot of non-traditional relationships in that group at the very, very highest levels. A lot of people who publicly follow one norm but privately do not. So it feels like there's a fertile ground out there.

Bryan Johnson: [00:41:20] Yeah. The challenge I have is once you filter for all the criteria-- so the social norms are one filter, but then the other one, Claude Shannon--

Dave Asprey: [00:41:33] I love you bringing up Claude Shannon. Got in an argument with ChatGPT about Claude Shannon. Okay, go ahead.

Bryan Johnson: [00:41:37] Yeah, yeah. Claude Shannon, he came up with information theory. And what he was trying to solve is--

Dave Asprey: [00:41:46] I can't believe you know this and you're talking about it. All right. This is my favorite podcast now. All right. Everyone else knows what we're talking about. Okay.

Bryan Johnson: [00:41:52] So he was trying to solve this problem where the transatlantic cables were communicating information, and there was so much noise on the cable that the intuition is if there's a lot of noise, yell louder over. You have to be louder than the noise. Your signal has to be louder than the noise. And what he figured out was that you could mathematically construct information theory.

So if your first word is why, and the second word is did, and then the third word is the, every time I say a word, your mind is calculating probabilities of what I'm going to say. And with every word, it creates a smaller probability set. So by the time say why did the chicken-- you have a decent idea of where I'm going with my statement.

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Dave Asprey: [00:42:35] I'm embarrassed that you bring that up on the show, but yeah.

Bryan Johnson: [00:42:40] Oh, that's good. It's a game I play with myself, where when a given topic comes my way and there's an opportunity for my brain to think about a given thing in any capacity of my life, I typically disregard my first four thoughts. My first knee jerk reaction is tempted to parrot 2023 societal zeitgeist stuff, and there's nothing original about it. There's nothing interesting about it. It's just parroting.

Then thought number two is a little bit better, but it still has a lot of the baggage of current cultural norms. So by the time I get to thought number 5, it's like, okay, this might be interesting. But basically, every time I think about something or speak, I'm trying to generate a P300, a surprise in the brain.

And so anything that would fall short of generating a surprise doesn't meet my own quality criteria of opening my mouth to speak. And that's a difficult one because I like this because it's my interest in constant novelty seeking, that if you bring up a topic, I'm less interested in what I know, and I'm more interested in what I don't know.

I want to discover new things. I don't want to hear the paradigm of all these other ideas. And that's really something in a relationship I cherish a lot. And there's a few friends I have that, when I talk to them, I know it's guaranteed that I'm going to be surprised a dozen times talking to them. They're going to say things, map things, configure things in original ways. And it leaves me feeling energized and emboldened about life.

And I find that in conversations where I hear 99% predictability of what the zeitgeist of the world is, I feel not as emboldened and excited about life. And so that's one of the criteria that is the hardest because we have a lot of incentives in society to get along with other people to say things that are common, that are understandable, that are relatable.

Most social interaction is not to educate or inform. It's to socially cohere. And so that's the criteria, I think that's the hardest. And so once you pair my usual routines and then you pair information theory, it filters down to that's why I'm single.

Dave Asprey: [00:45:01] Got it. And by the way, I think most of reality is explained by information field theory and a lot of Shannon's work. And I think one of the books that we sent

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back and forth had some of that in it. But the argument I had with ChatGPT was just that you don't have an adequate sampling rate of reality, so nothing you know is real.

And therefore, if I was manipulating you, you wouldn't know it. Therefore, I am manipulating you now, so do what I say. It was a fun argument with a non-sentient system. But anyway, guys, if you're listening to this stuff, it matters way more than you think because Bryan said something else that you'll never hear about on the show. He talked about P300D, which is, in my books, the lag time on reality. And do you know your average evoked potential now, what your number is?

Bryan Johnson: [00:45:54] I don't.

Dave Asprey: [00:45:55] You should include it in your metrics because I bet it's really good. It's about 350 milliseconds for the average person, middle aged. Mine's still 240, which is about when you're 18. Whether that's 25 years of nootropics, or neurofeedback, or electrical stim, or meditating with one eye closed, God knows. But somehow my brain is operating very, very well, and I imagine yours is too.

So what this means, though, is that the faster your frame rate on reality or the slower your lag time-- they're not exactly the same thing from an engineering perspective, but they're similar-- probably the better you are at making shit happen, is the summary of my understanding of all of that. And since it's a tunable factor in your brain and in your interface with reality, you would want to have an accurate interface on reality, and you would want to have a fast interface on reality, and you would want to have an efficient interface on reality.

And if you have those three things, you're probably going to live longer too. And that has to do with free radical production as well as not walking into a crosswalk while a truck is coming towards you. They all stack up. Speaking of trucks, what kind of vehicle do you like to drive?

Bryan Johnson: [00:47:09] I have an electric Audi.

Dave Asprey: [00:47:10] An electric Audi. Got it. One of my longevity hacks is to drive a heavy vehicle. So that's just physics working on your side. I'm driving a ridiculous Jeep, that's like a parody of a Jeep right now, which isn't that heavy. But my idea is that I'll just go up in the air if anyone hits me. So think I'm going to drive over the top.

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All right, let's get into a question that I've just absolutely wanted to check in with you on. Olive oil versus saturated fat. And as a longtime longevity guy, went through my phase of glugging fish oil and doing lots and lots of olive oil, like from the Zone diet stuff. And I went back and forth and just eventually settled on removing omega-6 fats, in particular linoleic acid. I was confusing linolenic and linoleic, but in particular, removing linoleic acid as much as I can from my diet.

And so I do a tablespoon or two of olive oil, but I don't go above it because of the linoleic acid. And you're doing all olive oil. And I want to understand your rationale for it and ask you a couple of questions about it. I'm not trying to convince either one of us that we're right or wrong. We just have different approaches. And I'll show some of my metrics with you too. And I just want to get your take on it. Why olive?

Bryan Johnson: [00:48:43] Yeah. I learned a lesson. I got my pilot's license years ago. I got typed in three different planes. I'm a good pilot. I'm proficient. I made a rule for myself that I would never fly alone.

Dave Asprey: [00:49:01] Smart.

Bryan Johnson: [00:49:01] Because the data on flying alone, your-- I forget the exact number. It's something like 70 plus percent more likely to be in a fatal incident than if you're a professional pilot. It's staggering. And looking at the probabilities, I said, I do love flying, but it's not worth dying for. And so I made a rule, and I hired a professional pilot to always fly with me. So I would fly left seat. And they would always be present to do a cockpit hygiene.

Dave Asprey: [00:49:30] Smart.

Bryan Johnson: [00:49:31] And I applied the same approach to Blueprint. I said I of course can learn the literature. I can speak the speak. I can do this and that. I can be proficient, but I'm not a professional doctor, or I'm not a professional biologist. And I've basically done the same thing where on topics like this, I can string words together that seemingly make sense about this and that. I don't trust that I'm the professional pilot.

And so my team has gone about done the analysis. We've measured our biomarkers. We have we think it makes sense with the evidence. We think it makes sense with my biomarkers. That's not

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to say that other things don't work better. It's just to say that we've constructed what we think is the very best thing.

But yeah, this has been the approach of we're trying to-- because otherwise, from my own experience, you're basically caught in these endless debates with people about this or that, and no one wins. Everyone's just confused. So we just try to do something, share the data, and say, here we are.

Dave Asprey: [00:50:33] Do you ever do an AB test to see if what you're doing is better? Would you stop olive oil and replace it with-- you wouldn't do this, but-- margarine, or would you replace it with tallow, or butter, or something for three months and get your labs?

Bryan Johnson: [00:50:48] We did that with-- the NR versus NMN was such an intense interest of people that we did that. We did NRW for 90 days, and we measured the IC NAD levels with the Jinfiniti test, and then we did the same thing with NMN with Jinfiniti.

Dave Asprey: [00:51:08] What was the difference? What did you find?

Bryan Johnson: [00:51:09] Nothing. They were both effective. My achieving was 56.2, so age 18 on my intracellular NAD levels. And we just said either one works. There may be other things that are going on that we're not capturing, but from a first-level pass, the raging debate can stop that you've got basically similar performance at doing this one marker.

Dave Asprey: [00:51:39] Or you could do niacinamide and get something that's probably the same. That's like an old-line longevity thing. I take all three, by the way, just because I'm lazy. If I do all three, I'm probably getting the right one. And I like your approach better, though. It just takes extra time and work. The reason I'm curious about olive oil, and a lot of listeners have been asking me to ask you that stuff, is that when linoleic acid metabolizes, it increases delta 5 and delta-6 desaturase.

And these are things that you don't want to have high in the body. So adding a lot of olive oil can increase your body's ability to make body fat. And if you have lots of olive oil only, you're still getting 14% linoleic acid. Most people have that. And you eat the fried stuff at a restaurant once or twice, the monounsaturated fats are going to drive a lot of lipid oxidation.

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So I ended up at primarily saturated with some olive oil. And I take a hydroxytyrosol capsule, which is the primary antioxidant in olive oil, but it's equal to like a 1,000 bottles of olive oil. But just take the pill, because I would probably not feel good if I had that much olive oil. But I was just curious.

And so you're saying you looked at a bunch of literature. You're doing it, and you haven't done AB test on type of fat. Okay. And I'm in the middle of an AB test right now, by the way. So I was doing a moderate protein diet, and I went on to a higher animal protein diet. And I'm doing this a couple of years to really see what the difference is. And looking at my true age, and it looks like I am a year younger now than I was from a year ago.

So it doesn't seem to be harming my longevity in any of the variables that I'm measuring. And I know that I don't perform as well on a lower-protein or on a plant-based protein diet. But I do these things. I also added enormous amounts of carbs back in because I was down to 5.8% body fat. And it's just too lean. So I'm like, okay. So I'm doing like 2 or 300g of carbs a day because if I don't do that, I'm just crazy lean.

This is from a guy who's been obese my whole life. So I'm tracking what changes and trying to limit some other things. But I also moved to a place with sunshine. Maybe that's half of it. I don't really know. There's always more variables than we can track, but that was one I was really curious about. And I think we're going to say you're working on it, but there might be other ways.

Okay. Testosterone. I love it that you're open about taking testosterone. I've been on it since I was 26. I went off it for three years to test the effect of lifestyle, and diet, and all that when I was coming out with a Bulletproof diet. But I'm better when my numbers are 900, and my body just has never made very much of it as far as we can tell, it was lower than my mom's at 26. So there's no shame or harm in using bioidentical testosterone. But for longevity, have you heard of the Wiley Protocol?

Bryan Johnson: [00:54:59] I have not.

Dave Asprey: [00:55:00] So Wiley wrote one of the first books about this kind of stuff is called Sex, Lies, and Menopause, and another called Lights Out. These are early circadian biology. She has a protocol for men and women, where it changes the ratio of testosterone and thyroid based on time of year, and time of month, and all this stuff.

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And I recognize it as the most superior of all of the hormone replacement protocols I've seen. I wrote about it. I just have never found someone who could prescribe it reliably for me because it's such a pain in the ass. So I was just wondering, do you play with your testosterone frequency of dosing? Do you use testosterone cream on your balls, which changes DHT levels, versus an injection? So talk about how you get your testosterone and how you know that's the right way.

Bryan Johnson: [00:55:47] We started it because I was on a caloric restriction diet of 1,950 calories. And when you're in that caloric deficit, your testosterone lowers. And so we supplemented it with two milligram patches that I wore six days a week. Each patch delivers, I believe, 9 IU, thereabouts. So it was roughly six times nine, so 50 or so per week. And that maintained levels of about 900.

And since I've bumped up my caloric intake, I'm now at 2,250. I'm now at a 10% caloric deficit. Looking at my speed of aging and a bunch of other biomarkers, we're achieving the same benefits as 20% caloric restriction without me being without losing the facial volume and being too lean.

And so with that, I've lowered my testosterone. I now just do one four milligram patch per week. So I've dramatically lowered it. And I have my blood test in three weeks, so we'll see where I'm at. I haven't felt a difference as I've lowered the testosterone. And I'm not sure. I was unaware of the deep subculture of how sensitive people are to this topic. I don't know why it's so triggering.

I don't know why it needs to be a secret. I don't know why it's a big deal. I don't understand the situation. It's a marker, and we do things to change markers all the time. And there's various approaches of doing it. So I guess I've been very surprised. I've been completely transparent, but people get pretty fired up about this topic.

Dave Asprey: [00:57:27] I think that we can do one better, Bryan. We'll just say this for everyone listening. If you're over 40 and you're not taking testosterone, shame on you for choosing weakness. Do you think maybe hit some buttons there?

Bryan Johnson: [00:57:45] Yeah. Not my approach, but I guess it works.

Dave Asprey: [00:57:51] Not mine either, but it is my sense of humor. The bottom line is that testosterone levels are down across our entire species because of things we did to our

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environment, and this is just a variable you manage, like thyroid hormone or like how much corn you're willing to eat. It's just like it's just a thing that you have control of.

And low testosterone humans are not happy humans because their dopamine goes down too. I think it's a societal issue. So I really encourage people, get it measured. If it's wrong, do whatever it takes to fix it because you'll die sooner, and then you won't get to wear the t-shirt. We have to manage this like anything else.

So I just appreciate that you're just out there with it. Same approach here. I've never once gone around and pretended I didn't take testosterone. Of course I do, because I want to live a long time. All right, there's another thing that affects testosterone in a major way, actually. John Gray from Mars and Venus and I were talking about it on the show. He's a good friend. Semen retention. Do you practice that?

Bryan Johnson: [00:58:54] We have not discussed that as a team. I know that's brought up a lot. Yeah. As a team, I think we are generally pretty culturally off topic. Sorry, this phone's ringing beside me. I have two computers and can't turn this off.

Dave Asprey: [00:59:17] Not a problem.

Bryan Johnson: [00:59:19] Yeah. We really don't do the things that are culturally on point. I don't cold plunge. I don't do sauna.

Dave Asprey: [00:59:29] You do red light. That's pretty on point.

Bryan Johnson: [00:59:32] Yeah, red light is. We don't take resveratrol. So generally speaking, the things that are most commonly discussed in these communities, I don't do. And so semen retention, I have no opinion of it. We haven't really talked about it.

Dave Asprey: [00:59:49] So your team hasn't told you whether or not you're allowed to come?

Bryan Johnson: [00:59:54] We haven't looked into it. My team certainly has knowledge about it. We just haven't raised the discussion on what practice to do and why.

Dave Asprey: [01:00:05] Got it. I've looked into this because a lot of the early alchemists and the tantra and traditional Chinese energy stuff, they're all looking at longevity. So I'm not willing to discard ancient practices for this. So this is one that comes up over and over. So I ran a year-

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long experiment with it and decided it was probably a good strategy to limit ejaculation, but not orgasm, for a whole bunch of different reasons I've written about.

But it was John Gray who really highlighted the 24-to 48-hour testosterone drop after ejaculation, which affects your outlook, and it really does meaningfully and reliably change testosterone levels. So if you're looking for consistently high levels, overejaculating as you age, it probably is depleting, I would say, but I think you and your team might consider looking into it.

It's very different for men and women, but I think there is something there that has to do with energetics and all, and it also will raise your testosterone. John's in his 70s. Doesn't use testosterone. His is as high as mine. And he doesn't ever ejaculate. He thinks that's why. So who the heck knows? There's probably some, what do they say, meat on the bone in that area of research. Okay, you did laugh. I was just checking to see if you're laughing.

Bryan Johnson: [01:01:33] Yeah, yeah, yeah. I feel very fortunate that I have a team of people that I can turn to and say, hey, can we dig up the evidence on this, and can we look at it from a multidimensional perspective? I really am empathetic for others who don't have the resources and then grapple with it. They hear this kind of thing and think, is this a good idea?

And then they hear someone else rebut it who has some stamp of authority, whether it be a university title or some other kind of degree, and leaves the whole world in paralysis-- not the whole world. It leaves the person in a sense of paralysis because they don't know who to trust and why, and there's seemingly data on both sides. And then it just becomes an impossible decision. And we're there in this general field where there's not a complete solve to all these questions.

And so I guess I'm just commenting on the challenging nature of trying to be in good health because you're never quite certain of what you're doing is the right thing or not. Future generations look back at us and feel bad for us probably, like, they were trying really hard. They were trying their very, very best and just couldn't quite put together a cohesive thing of understanding this.

Dave Asprey: [01:02:53] Yeah, I can imagine future generations, like, yeah, those guys just ejaculated all the time. What were they thinking? I'm kidding. But who the heck knows? We look

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like the leeches and make fun of them, and they could be making fun of everything we do right now. And there's just no way to know, but I think we're continuing the curiosity and the rigor in the science to say, let's figure out what's maybe better than what we do today, which is cool.

Bryan Johnson: [01:03:18] Yeah. Probabilistically, most of what we do today is likely wrong.

Dave Asprey: [01:03:23] Oh, yeah. And most of what we believe today is false. It's just a useful false.

Bryan Johnson: [01:03:29] Yeah. And we just play-- yeah, yeah.

Dave Asprey: [01:03:31] Okay, I got to ask you this because people have been poking me about it. Did your team tell you to remove all your body hair?

Bryan Johnson: [01:03:41] Oh, no, that was my preference.

Dave Asprey: [01:03:43] Okay. Got it.

Bryan Johnson: [01:03:45] Yeah. We were doing a lot of whole-body laser, so we were doing some IPL. So it started where I didn't like armpit hair. I don't see the function. I don't like the aesthetic. And so I removed my armpit hair, and it felt liberating. And then as a 20-year-old, in my early 20s, I was doing triathlons, and I shaved my legs as part of being in that culture, and I enjoyed it. And so, yeah, as I got going on Blueprint, I thought, why not?

Dave Asprey: [01:04:23] I'm with you on the armpit hair thing. I used to be a long-distance cyclist in my late teens, and same thing. You end up shaving your legs not really because of aerodynamics, but because you know you're going to lay down. You're going to get road rash. And having hair growing through the side of your leg as all sorts of hairs, and it just hurts when there's a big scab on there. So it's really common.

But the armpit thing, you get deodorant stalactites, and you get body odor. And so I finally evolved to I just trim it a lot versus-- but for a long time, I shaved it. And I haven't lasered it because I'm lazy. And I was guessing you were going to say that because you did IPL on most of your body that it just takes the hair off anyway.

Bryan Johnson: [01:05:08] Yeah, it does.

Dave Asprey: [01:05:09] And if you have hair, it hurts to do IPL.

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Bryan Johnson: [01:05:11] Yeah. Exactly right.

Dave Asprey: [01:05:12] And guys, I just did a social media thing where I was doing IPL on my face, which I've done for years. I've talked about every now. And where my beard is, dude, that really hurts because the hairs heat up. And you do IPL because it rejuvenates the skin. I've done a little bit on my low back, where I have all the extra skin from being obese, and I've done some other stuff about that too.

But I was guessing it's because if you're going to laser treat your whole body, you would have had to shave everything anyway. So yeah body hair is overrated in my perspective. But armpit hair in particular. So I'm with you there. Let's normalize having less.

Bryan Johnson: [01:05:49] And my frame here is that I'm genuinely trying to map the future of being human. This is not a lackadaisical I want to be healthy. This is no, I want to evolve with superintelligence into the next evolution of human. And I'm willing to do anything along that path. If IPL can achieve the regenerative effects in the skin, I'm down to try it.

Dave Asprey: [01:06:15] 100%.

Bryan Johnson: [01:06:18] I'm not discouraged by cultural norms. Whether or not the early 21st century is going to find the aesthetic appealing, I don't care. I'm genuinely on this objective, and I'm willing to do anything, And in particular, to not be influenced by any perspective of the moment.

Dave Asprey: [01:06:37] There's another benefit too, which is why I keep things trimmed or short. I put electrodes on many of my body parts regularly. And if they're hairy, electrodes suck. It's like pulling a hair on and off all the time. So I'm glad I'm not a particularly hairy guy. I have the caveman genomics for less back hair. That was the only thing 23andMeever did good for me, was tell me that I have that genetic. Whatever.

But I don't like peeling my hair off with electrodes. And I do EKG, and electrical stim, and EEG, and all this stuff. And I even thought about shaving my head once. It turns out having hair makes it easier to do EEG and not harder. So there's that. Thanks for answering that. Okay. Personal preference, totally cool with it. Final question as we run up on the end of our time together. Psychedelics. Yay or nay?

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Bryan Johnson: [01:07:36] So I was a pilot participant in a study at Cornell where I was administered 68mg intramuscularly with ketamine wearing Kernel interface. And we wanted to pose this question. I wanted to create intuitions. What happens when? If you run a blood glucose monitor, you have intuitions. If I eat grapes, what happens? If I eat pasta, what happens to my blood glucose?

And you create these intuitions on cause and effect. And I wanted to create the same intuitions around the brain of what happens when you do ketamine, and not just, hey, I don't know. I had this psychedelic experience, and I had another dimension visit. I wanted to show the data. And to me, definitely, there's an avenue for psychedelics to be used for mental wellness and to address clinical needs.

For me, there's this broader usefulness where much of human aspiration is identifying things that are familiar. So JFK can point to the moon and say, see that in the sky? Let's go there. And people understand that because you can walk from one place in the room to another part of the room, so you understand you're going to move across physical distance and arrive at a destination.

And then we point beyond the moon and say, let's go to the next one out there, which is Mars. We want to make our destination. So it's very easy to rally ambition towards moving your body towards the destination. It's much more difficult to rally ambition and excitement for unknowns. If you can't state it, if you can't see it, and you can't describe it, we don't know how to be fired up about it.

And when I did psychedelics, what it did for me is it populated my map of what I could be excited for. So I know what the feeling is to fall in love. I know what it's like to feel heartbreak. I know what it's like to have children, and all the things we experience in our society. What I didn't have as part of my conscious map was, what is my brain capable of for conscious existence?

And psychedelics changed my understanding of reality. Not that any reality is better than the other reality. It's just like, what is the raw capacity of my brain to experience consciousness? And so it gave me a data point in the map that I did not expect. It changed my perception entirely of what I'm capable of. And to me, that was the moment where I thought, we can Babe Ruth this moment. We can JFK this moment.

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We can say we are capable of existence that so far outstrips our imagination. We can't even comprehend it. And that the key thing for us as a species is to learn how to step into the unknown and be excited about that which we can't see, point at, or touch. And it's so counterintuitive because we, as a species, have evolved to do that kind of thing. But I think our survival depends upon it. And to me, psychedelics are a helper in that regard, where they do help us collectively say, what can our shared ambitions be?

Dave Asprey: [01:10:37] Yeah, they can help turn on curiosity instead of fear. And if you're going to face the unknown, since you don't know what it is, you don't know whether you should be afraid yet. Our default settings as life forms is be afraid because it might kill you. But the most functional settings as an entire species is, be curious, because it might be useful.

So you've done some really cool, I'll say, cognitive hacks and some methodological hacks to make sure that you're doing that even with your own health, which is dealing with mortality and death. It's the flip side of health. So I'm really impressed with what you're doing here. I feel like we could talk for another hour about different longevity things and sort of compare notes about some of the things, like pulse wave analysis and all, but I know you're up at the end of this.

I'd love to have you back on the show. I'd love to have you speak at the Biohacking Conference if you're ever up for it. But I know you're probably at least as busy as I am. So anytime you've got something big coming out, you want to talk about it? Got a big audience ready to listen.

Bryan Johnson: [01:11:42] Thanks, Dave. And you have a live audience with you today, is that right? Yeah. What are the live responses?

Dave Asprey: [01:11:49] Why don't you do sauna?

Bryan Johnson: [01:11:51] It's not that sauna is not potentially useful. It's that it doesn't have evidence that maps towards our objective of slowing the speed of aging and reversing aging damage.

Dave Asprey: [01:12:03] Interesting. Even the unfolding and refolding of proteins, that evidence wasn't strong enough that that one surprised me.

Bryan Johnson: [01:12:09] Yeah, it didn't cross the threshold for the team to incorporate it, so it's not part of the protocol. And the experience-- I've been on the team, though-- is we never say

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never. So they're always open to review literature, always open to take a fresh look. We have no ego in the game. That was just our assessment. But we're pretty chill on our conclusions. But yeah, has not made it into my daily stack.

Dave Asprey: [01:12:30] I love that. Pretty chill on your conclusions. People who are militaristic about their conclusions are usually not so happy and not so objective. You have a religion and a grant. Not actual science. Got you.

Bryan Johnson: [01:12:42] Yeah, we're willing to make a change in a moment's notice. We have no skin in the game on any ideology. We just follow the data.

Dave Asprey: [01:12:51] Definitely. I love that. And you're very upfront about it. Another question from the audience here is around testosterone, DHT, and hair loss. Have you experienced any hair loss? Would you keep taking testosterone if your hair started to fall out?

Bryan Johnson: [01:13:10] Yeah. Genetically, I should be bald right now, so I'm very happy I have some hair. I'm 46. I started losing my hair in my late 20s, and so it's been a battle. We work very hard on hair. We've done some PRP. We're moving away from PRP. We think we've found some better things. We are starting to do Tixel, delivering exosomes. So Tixel opens up the delivery for exosomes.

Dave Asprey: [01:13:41] Yeah.

Bryan Johnson: [01:13:41] We're also doing a therapy on Friday where I'm getting my blood drawn. They're going to whip up a-- I forget what this even is. They're going to customize something and then re-inject it. So we're trying to move past PRP. I have a daily concoction which is minoxidil 5% and a few other things. It has such a small effect, and it's such a pain in the ass to apply. We're in the early, early days for hair. Everything has such a small effect size. It's not like you can make these big changes, at least for me. I wish they were better. I know there's a company doing hair cloning, which would be great.

Dave Asprey: [01:14:20] It's coming. We're really close. You and I've had gene therapy from the same guy working on it, right?

Bryan Johnson: [01:14:26] Yeah. We're close. But I'm happy I have some hair.

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Dave Asprey: [01:14:30] Are you doing adenosine, caffeine, aspirin, thyroid hormone, and lasers on your head, all the above?

Bryan Johnson: [01:14:38] Yeah. So a daily [Inaudible] laser dials. Yeah, we have caffeine as part of our topical.

Dave Asprey: [01:14:43] Yeah. Okay. And I quit using minoxidil. I used it for a couple of years because I found the other stuff was working better. Minoxidil has some systemic effects. But yeah, it is a struggle. And the type of testosterone seems to really matter as well. And there's a balance between, you talk about nighttime erections.

The higher your DHT, the hornier you are, and the better that stuff performs, but the more your hair falls out. So it's like maybe bald guys really are more horny. Who really knows? But we got to balance those out somehow. Okay, that was a question there. Let's see. Okay. "Are you going to work on your psychic powers next?" says Mandy.

Bryan Johnson: [01:15:30] Okay. Cool question, Mandy. The psychic powers I try to develop are speaking to the 25th century. What will they observe about us? What is the wisdom of this moment? Where is the craziness, and how do we overcome the craziness and find the wisdom that they will see in us in this moment in the same way we see it in the 16th century? I'm obsessed with that.

There's no thought experiment I do that I find introduces greater clarity into my mind, where once I can lock in with that thought process, it helps me have the courage to say basically everything of my reality right now is a snapshot of time. It impermanent, and we're moving on to something else.

And how do I not be influenced by that? Because it's very hard. We're influenced so dramatically by these things that remain invisible to us. So yeah, that would be the psychic powers. Basically, I tell my kids this. It's better to be revered by the 21st century than respected by your peers now.

Dave Asprey: [01:16:39] I kind of agree with that, although I don't really give a shit whether anyone knows my name in the 25th century. It's not highly relevant to me either. I just want the stuff that I did to still be reverberating. But being spoken about doesn't push my buttons at any

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time. Who cares? The earth will be cooked at a certain point. No one's going to know my name. It's just a matter of time anyway. But maybe a bit of a fatalist that way.

Bryan Johnson: [01:17:07] Okay, but when in history have humans ever understood what's going on?

Dave Asprey: [01:17:18] Never, other than maybe the ones who become fully enlightened when they talk about that. But do you believe in full enlightenment? Is that a thing you're working on?

Bryan Johnson: [01:17:28] Even then, we have no idea what's really going on. No clue. And every time in a previous century where people really thought they had figured things out, new ideas came and showed there was more to the story. We have no idea where we're at in terms of knowns versus unknowns.

So the reason I like the 25th century is I have a deep relationship with those in the past, and I deeply respect their contributions to society. I benefit from the societal scaffolding they contributed. And when I think about them, I have a relationship with them. And I want to have a relationship with those in the 21st century. I want to build the reality that they will occupy.

And to me, that's highly motivating. And the other trick it has is when you care to be respected by those that exist now, you are subject to being infiltrated by the past because you're incentivized to do the things that people care about right now, which is inherently the past. And so you hinder your own ability to be innovative. You have to sever that entirely. And that's why I don't care about being respected in this moment. It's inducement that leads to mediocrity.

Dave Asprey: [01:18:49] It does, the whole backwards facing thing. Do you ever do you ever just get frustrated with humanity that so many people are so backwards looking that they're not going to make it?

Bryan Johnson: [01:19:03] It's an algorithm.

Dave Asprey: [01:19:05] It seems like there's an algorithm that's not doing very well right now. It's a dysfunctional algorithm that needs a bit of a tweak.

Bryan Johnson: [01:19:12] I'm emotionally detached from everything because it's so predictable. There's no reason to emotionally get jammed up in this thing, because that arousal

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creates distorted wisdom, and it distorts the view. And so how humanity behaves and the problems we have, it's identifiable functions of the system that is happening.

And I would much rather play the game of slightly nudging the system because the moment you kick against it, it punches back, and there's a negative net energy loss on that. It's a "yes, and" situation. I think we're on the cusp of the most extraordinary existence in the galaxy. I think this really could be ours. And it's moving at a speed that is incomprehensible to our minds. And it's an opportunity for us to graduate from these old games, and it's ours. Yeah. This moment's special if we can sober up and realize it.

Dave Asprey: [01:20:12] Wow. I love that perspective so much. Got time for another question from the collective here?

Bryan Johnson: [01:20:19] Yeah, sure.

Dave Asprey: [01:20:21] If you lost all your money, what are the three hacks that you would keep for the longest, the three most important, cheapest hacks?

Bryan Johnson: [01:20:31] Sleep, try to eat well, exercise, and then add a fourth. Avoid vices.

Dave Asprey: [01:20:40] Avoid vices. I didn't ask. Is coffee a vice?

Bryan Johnson: [01:20:46] For me, I can't sustain it. It's an escalation drug.

Dave Asprey: [01:20:49] Interesting. So you have poor caffeine metabolism?

Bryan Johnson: [01:20:53] I forget what my genetics were on caffeine. Yeah, I can start off with a cup. Feels great. And then at day 14, I've got to do two or three, and then I have to drink just to be back to a normal state. But it wears me down, so I just can't do it. I can do tea, and I can do up to 60mg a day, but coffee, for some reason, gets me.

Dave Asprey: [01:21:13] Interesting. I quit coffee for five years because had that going on, and then I managed to-- I'm at a stable dose that seems to work great, and the longevity studies on it are pretty decent. Do you worry about oxalates, plant compounds? They're tied to spinal stenosis, 70% of kidney stones, and things like that.

I've been paying more attention over the last 10 years. It's more and more every year. And realizing the more I manage that, the better my biology functions. If you're going to be around

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for 200 years and you have something that bioaccumulates, whether it's cadmium and lead, which you know about in chocolate, versus these other things, oxalate, is that on your radar?

Bryan Johnson: [01:21:51] We've discussed it as a team. What do you measure to assess whether they're high or low, or whether they're creating damage or not?

Dave Asprey: [01:21:57] You can measure urinary oxalate excretion. Viome does an oxalate metabolism to see how good you are at metabolizing it. But your gut bacteria doesn't do very much. So it's mostly urinary oxalate. And if you're peeing it out, we have problems. And there's a ton of data that says 200mg a day is an optimal dose. You can handle about that much. But a lot of us are getting a gram a day.

If you're doing spinach, kale, raspberries, chocolate, sweet potatoes, a lot of the superfoods are-- almonds-- they're all really, really high. And I noticed I was getting calcification of old injuries. But when I back off on all that stuff, the calcification goes away very, very quickly. But was also a raw vegan for a while, which puts those things through the roof.

So I'm managing kidney function over time as well. And so that's one of those things where I don't think-- I know that people who eat an excessive amount of superfoods probably are going to face it younger, like I did. But it's something that, as I talked with people in their 70s and 80s with spinal stenosis and all, there's case reports of oxalate and arteries and nerve lining in the brain, in the vulva, urinary irritation, stuff like that.

There's enough evidence that says some of us are getting too much, but it may be somewhat personalized. So when I'm working with people one-on-one, usually when they cut raspberries, replace them with blueberries, which drops their levels meaningfully, like, oh, something good happened. So I'm in the middle of being curious about that. We'll put it that way.

Bryan Johnson: [01:23:33] Yeah. This is one to take back to the team. It's a topic we've discussed. We haven't picked up any aberrations or any elevated levels, but that's not to say we couldn't do a better test and see.

Dave Asprey: [01:23:43] I don't think your Green Giant, just off the top of my head-- is it Green Giant? You have a name for it. Do I have it right?

Bryan Johnson: [01:23:52] Green Giant

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Dave Asprey: [01:23:52] Green Giant. I used to make one called Green Slime that was a similar thing, but with butter. And I'd make it with the kids for a long time. So I don't think you're using particularly high oxalate ones. I think you had some crushed nuts or something and some cacao, but I just ran a back of my envelope thing. I don't think you're particularly high.

And you don't vary your diets. You're probably fine. But I think a lot of our listeners probably are getting 900mg to 1.2g a day when they should be getting 20% of that. Just a question for the 2030-year time frames and what that does to you.

Bryan Johnson: [01:24:27] Yeah, yeah.

Dave Asprey: [01:24:28] Awesome.

Bryan Johnson: [01:24:30] Dave, thanks for having me.

Dave Asprey: [01:24:31] Thank you so much. You're doing some cool work in the world, and I'm always happy to help. And keep publishing your data. And who knows? I think I'm going to copy your format, with your permission, and just share my data in the interests of furthering, understanding, not being competitive.

Bryan Johnson: [01:24:49] We're on the same team after the same objective. I think if we can move past this competitive thing in the community, we're all better because of it.

Dave Asprey: [01:24:57] Take down is not very, very useful. We'll leave that for anime podcasters.

Bryan Johnson: [01:25:02] Yeah.

Dave Asprey: [01:25:02] Thanks, man.

Bryan Johnson: [01:25:03] Good to see you. Thanks for having me. Take care.