

Dave Asprey:

You're listening to the Human Upgrade with Dave Asprey. And today's interview is one that I've wanted to do for probably 10 years and just haven't gotten... the stars hadn't aligned until then. And it is with one of the founders of Wired Magazine and someone who has been a continuous source of interest and news and data for me for the last... God, since I was probably in my very early 20s as a computer hacker. The first edition of Wired Magazine was... It was like, "Oh my God, someone gets me." And Jane today, having basically dissected nerds for her entire life, runs one of my favorite newsletters or news sites called NEO.LIFE. And she writes a lot about biohacking and the future. And if you were to combine someone who just really understands society and understands tech and has probably read as much science fiction as I have and just gets it, you would have Jane, although she might have read more science fiction and may get it better than I do. So none other than Jane Metcalfe, one of the most interesting people that's been on my list of, I've got to talk to her. It finally is happening. Jane, thank you for coming on the show.

Jane Metcalfe:

Well, I'm thrilled, Dave, and I feel bad because I feel like I should have reached out to you much sooner.

Dave:

Thank you for coming on the show.

Jane:

Well, I'm thrilled, Dave, and I feel bad because I feel like I should have reached out to you much sooner, because you're one of the people that got it. I mean, I was starting to tell you, and we said, "No, save it for the podcast," that the tech bros that I grew up with were very disembodied. They were very led by their heads. And I started to get crazy sitting behind my machine all day long. And I love nature, I love being outdoors, and I love smelling air and touching things and moving my body. And you were one of the very first people that basically ventured forth and said, "Yeah, I'd like some muscles. Yeah, I'd like to lose weight. Yeah, I'd like to be strong and feel good." And so I was like, "Okay, now this is going to be interesting." So..

Dave:

You clearly can see the future, the same way that I do. I can count on one hand the number of people who really are somehow good at futurism. And it's not because they think about the future a lot, it's because they just feel about the future. At least that, that's my sense of it. And I always felt about this, even as a very young nerd, I don't know the first e-commerce out of my dorm room, before we called it e-commerce, when I was just trying to not work at Baskin-Robbins anymore, stuff like that. But I could feel it. And I always thought that those feelings were just nonsense because I'm a computer science guy, and it was only a little bit later around the year... It had to be actually around 1997, I got my first EEG machine to start looking at my brain, and all of a

sudden I'm like, "Oh, there's a signal below the neck, and I could probably use that." But it was an actual Asperger's interpretation, because I used to have Asperger's syndrome. Classic Silicon Valley, Mission College Boulevard, Data Centers, all this stuff. And all of a sudden, I'm like, "You know what? I have a built-in onboard processing system here that's way more elegant than I knew. I just had a really bad user interface for it. So I'm just going to tune and customize my user interface on reality so that it does what I want and it's easier to use." The same thing I did on my early phones, I'd unsolder the LEDs and change the color because I could, because I'm a nerd. So that's the mindset. But you're someone who gets it. And what I want to know is, how did you get your ability to just know what's happening? Because your newsletter is amazing. Wow, okay, how do you do this? Give us your secrets.

Jane:

Oh, thank you. Well, first of all, thank you. I'm super flattered. And I think it comes down to futurists are basically optimists. If you weren't an optimist, you would think there is no future. And so I think that's our default mode setting. And if you're an optimist, then you look for things that support your thesis because everyone around you is super pessimistic. It's all doom and gloom, it's all cynicism, it's all cyberpunk, everything's going to get worse, and the forces of democracy and capitalism are going to erode our freedom and privacy and all good things.

And I think it's just a matter of not being the specialist. My father told me that, "Problem with you, Jane, is you got to just focus on one thing. You got to get one thing and be really good at that one thing." And he was right. I would probably have had a much easier life if I had done that. I probably would've died of boredom if I had done that. And I don't think I'm necessarily a futurist, I think I'm just super interested in really smart people that are building things. And so if you do talk to enough people across enough different fields, and you mentioned science fiction, one of the things I realized long about the time that Jeff Bezos and Elon Musk and Richard Branson were all shooting their projectiles up into the upper atmosphere.

Dave:

"They're projectiles," I love it.

Jane:

They're basically just building the world they read about as kids. So we're basically just manifesting the visions that our science fiction writers have laid out for us.

Dave:

Do you think that fiction writers actually do create the future?

Jane:

I do. I do.

Dave:

I think the biggest evidence we have is The Simpsons, isn't it?

Jane:

Yes. Yes. It's perfect. It's totally perfect. They anticipated Gen X... Or not Gen X, but millennials and Gen Z in a way that you can't... you can't make that stuff up.

Dave:

So here's a question. I didn't think I was going to ask you this, but I've been pondering it, and we know things about quantum physics and the observer effect and all. And if you get, oh, a few billion people all thinking about something with a story, does that make the story happen?

Jane:

I fervently believe that.

Dave:

Yeah. I think we're all collectively making the future, which is why watching horror, I mean the news, they're kind of the same thing, is probably bad for the world.

Jane:

Totally agree. Doom scrolling is bad. I think a lot of social media is just bad. It's bad for your soul. Yeah, I never watched horror movies growing up. Literally. Whatever happened to Sweet Baby Jane, do you remember that black and white film with Joan Crawford and Bette Davis?

Dave:

Oh my God.

Jane:

Oh my God. They were sisters, and one was bedridden, and the other was tormenting her. And oh, it was so scary that I had to go read Winnie the Poo before I could go to sleep. But as an athlete, I realized that my sister and I used to play field hockey, and she was the goalie and I was a striker, and she used to paint her goalie pads with white shoe polish and make it as bright and shiny as she could. So I'm storming down the field, getting ready to smash one into the corner of the cage, but all I see is the bright white pads. And so it's designed to attract your eye, and where you're looking is where you're going to hit it. And I used to be a hang glider pilot. They have this huge landing field. It was a cross country flight. And we were all going to land the same place, huge landing field. And they said, "There's just one thing, there's a power line right across the middle of the field."

Dave:

Oh no,

Jane:

But there's plenty of room on either side. And sure enough, after a couple of hours of flying, I was tired and whatever. And it's like, "Well, there's the power line." So I think it's really important that we create targets, that we envision models of the future that we actually want to build. And it doesn't make us pollyannish, it just makes us selective. And it's like, "Yeah, that's not really working. We could go spend our time talking about why that doesn't work, but what if we just kept looking for things that do work? And what if we just put out, here's how it would be wonderful"? And let's try and make that happen.

Dave:

That's a refreshing view on things. And, guys, I am just suggesting I've been an admirer, if you can't tell, of Jane's work for 30 years. And we have no agreements whatsoever about saying anything good about either one, but I will tell you that NEO.LIFE is a newsletter that's worth doing because the optimism you just heard is in there. There's an excitement about the future and a perspective that we actually can fix anything we break. And I still believe that to this day. And that's something I believe maybe from reading science fiction as a kid, or maybe having one set of grandparents from Roswell, the other one's from Los Alamos National Labs from the 1940s.

Jane:

Wow.

Dave:

I'm in a nerd family. I come from a nerd family. So I believe, "Oh yeah, I'll just go solve the problem. Oh, the oceans have plastic? How hard could that be?" And it's actually not as hard as people think it is. And that's something Elon's been good at. And this whole thing, hacking the human body, I don't know, I'm 50, my biological age is 11 years younger. I started out from behind. I'm 8% body fat. I work out 15 minutes a week. It was hard work. It cost me 2 million. 2 million is nothing compared to the value of that. And given how much money gets invested in NFTs that were worth 2 million, I'm just going to be really rude, but fuck you guys. What do you think about NFTs anyway? Are you a fan?

Jane:

I don't have time for it. I got other stuff to do.

Dave:

Oh, man. I fervently agree with you on that one. I do think if I was a recording artist, I'd be very interested in having control of my content there. There's use cases, but people get so excited about those.

Jane:

So one of the things I think is really cool, I was talking to Jennifer Dalno about this, about doing an NFT of the research and the approvals and things like that, and kind of putting all of those things together into something that went into creating a Nobel Prize winning, life altering discovery, that sort of thing is cool. And as you say, for artists, absolutely. I mean, a lot of my visual artist friends are all over it, and I think that's great. I have a collector gene, but I don't know, collecting digital things condemns me to a digital life. I'm still aspiring to escape from a purely digital life.

Dave:

It's interesting to hear you say that. I'm the same way. I actually have zero desire to strap VR goggles onto my eyes, unless, and I do do this, I have a special set of VR goggles with software that gives me sniper level depth perception beyond normal humans capabilities. I'll do that, but I'm not going to do it to look at Zuckerberg bouncing around like Terrence and... What's his other name from South Park? Terrence and Stewart. I just don't care. And you cannot pay me enough money to care, and you can't give me gold stars or anything like that. But I think you and I might be the 2% of weird people. Do you worry for our species if we all strap VR goggles on?

Jane:

I don't think we will all strap VR goggles on. I think there are amazing applications. I mean, you talk to surgeons doing VR things and remote robotic surgery, it's like, "That's amazing, to be able to map the tumor onto the body and see exactly what the contours are." I mean, brilliant applications, absolutely brilliant. But do we all need to dive into the metaverse and live the rest of our lives there? It's like, "No."

Dave:

Yeah.

Jane:

We just ran a sweet little Valentine's Day story about this couple that met on Never Met, which is a VR dating platform. And yeah, they met and fell in love, but then they said, "Okay, here's the big reveal. Here's my photo." It's like, "Okay, that went well. Meet me at the furry convention in Las Vegas." And so it's always going to come back to humans. And humans are tribal, and it's touch and smell and taste are three of the five things that make us human. And without those things, it's like our brain's not getting a sufficient amount of input. And I worry about what that means for the future of our species.

I tell my mom, she's 87. And sometimes she gets, I don't know, petulant or depressed or whatever, and she's like, "I don't want to wear my glasses. I don't want to wear my hearing aids." "Mom, that's really bad for your brain."

Dave:

Yeah.

Jane:

"Put your glasses back on. Put your hearing aids back-"

Dave:

That's inputs.

Jane:

Right? We got to keep our brains stimulated. And without all of that tactile and olfactory and gustatory input, I think we're less than what we could be

Dave:

If my parents start doing that, and they might, if you're listening, Mom and Dad, I'm watching you, I will just tell them, "Here's the deal. If those go off, you stand on the whole body vibration platform until you put them back on."

Jane:

Well, I am really curious what you think, because we need to interview this for a story that I want to do. Is autism a disease, and does it need to be cured?

Dave:

Wow. Yes, autism is a profound cause of suffering. It is a symptom of a disease. Chronic neuro-inflammation needs to be solved. And that is usually a toxin problem, which contributes to an autoimmune problem. Those are not okay because those affect longevity, and people on the spectrum have all sorts of additional allergies, they have all sorts of additional risk factors. So yes, it's a disease cluster, but it's probably a symptom, it's not the cause, it's not a disease. Just like chronic fatigue syndrome isn't really a disease, even though I've been diagnosed with it and fibromyalgia. And I had them, their symptoms of something else.

Jane:

By the way, I don't know if you saw this, but last week we wrote up a report about a particular bacteria that's associated with chronic fatigue and fibromyalgia.

Dave:

I did see that. It was so exciting. You find stuff that I don't find before I find it, which is real unusual, because I have a brain that does that. How does Jane always do this? Literally, I don't really read a lot of newsletters because I just... I don't know, I have PubMed, I just have ways of knowing things. And yours is something that I reliably read. Guys, NEO.LIFE is what it's called. neo.life is your URL., I think. I just get it in an email.

Jane:

Because neil.life is so much cooler than neolife.com.

Dave:

I guess it is now, .com is like sending a fax now. Is that how it works?

Jane:

Yeah, exactly. Exactly. Well, and also, I'm not doing a lot of commerce on neo.life. So there's that too.

Dave:

Yeah, there's that. Yeah, fair point. And you mean you actually still respect domain naming conventions? My God, so old-fashioned. Now, you write about this very interesting combination of things that no one else that I know of combines. I mean, you do biohacking and you do neuroscience, but also crypto and big tech stuff. And someone who didn't understand the nerd perspective would probably say those are unrelated. How do you describe NEO.LIFE, because I see the connection, but I don't have a word for it. What is it?

Jane:

So, I am only talking about tech insofar as it concerns human biology. And so as long as I keep coming back to that... It's Chat GPT to the extent that it affects human flourishing or decentralized science to the extent that it affects how we do science and how we do science publishing. So I always try and do that. I do occasionally allow stories through my focus that are ecological in nature, because I'm increasingly excited about how the understanding of ecology is influencing how we think about human biology. Before, they were two separate things. There were humans, and then there were plants and animals

Dave:

Keep doing that. I mean, the definition of biohacking, change the environment around you and inside of you so you have full control of your own biology. And that was why I decided to build a farm and do regenerative agriculture. And that's an enormous amount of work. But you learn so much and you just realize that if you want to write about what you're calling human flourishing, you have to include that. And for me-

Jane:

Absolutely.

Dave:

... I hooked Tech Bros, which was the audience for the Bulletproof Executive when I started all this, just by talking about human performance. Because there's a class of people, entrepreneurs, hedge fund managers, pro athletes and people in Hollywood and

recording artists who are performance people. You have to be on your game on stage in front of 10 or 100,000 people. If there's a billion dollars on the line, it doesn't matter if you're tired, you will do it. And that was what I wanted, and that was the origin thing, just the art of performance or whatever we called it at the time. So it feels like you've gone from performance to flourishing and broadened the scope even a little bit. What does flourishing humanity look like 20 years from now if your vision comes true?

Jane:

Oh, wow, that's a beautiful question.

Dave:

What does flourishing humanity look like 20 years from now if your vision comes true?

Jane:

Oh, wow. That's a beautiful question. So let me back up and tell you a little bit, just personally, that I was stuck in that performance mode myself.

Dave:

Yeah, me too.

Jane:

And initially I was an athlete, and it's all about breaking through the wall, pushing yourself beyond, digging really, really deep and finding that thing inside you that's going to keep you going when the others are falling apart. And your endurance is going to get you there. Your mindset and your physical endurance will get you there. And it works, and you're rewarded for that. And after that, I became an entrepreneur. And my father called me up on the night before Thanksgiving and said, "What are you doing?" And I was like, "Oh my God, Dad, I'm so excited. I am putting the finishing touches on the business plan, and then I'm going to drive it over to Mitch Kapor, whose private jet is on the runway at SFO, waiting for my business plan. How cool is that?" And he goes, "oh, I was hoping you'd be home bringing your Turkey." And I was like, "oh, oh."

Dave:

Different planet.

Jane:

But that was the thing, it's like, "Everything, get out of the way, because I've got this thing, and I'm going to be the best, and I'm going to work harder, and I'm going to catch that person, billionaire before he flies off." And it's like, "Early bird catches the worm," all of that stuff. And then I became a mother, and there's nothing you won't do for your children. It's like, "I'm exhausted, but I will get up at 3:00 AM. I will clean up the vomit or the whatever it is. I will do this. I will put on a happy smile and run around the park even though I'm dying inside." And suddenly, I got to middle-age and went, "I have nothing left. It's just flatlined."

Dave:

Yes.

Jane:

And so, for me, I see the younger people talking about performance, and I am at a different place in my life. And that, I think, gives me a little more perspective because it's not about your work. It's not about showing up and showing off. It's about integrating your needs with your desires so that you're coherent. And I just wasn't, I got way out ahead of myself. And aging has taught me that I need to... I can't get over my skis anymore. And so, for me, human flourishing... I said this once, and a friend of mine has been repeating it for five years. I said, "To me, human flourishing is when what you think and what you do and how you feel are all aligned."

Dave:

Wow.

Jane:

If you are depleting yourself for some goal, that's not flourishing. And so Ariana Huffington actually has been on this for a long time, and I have huge respect for her.

Dave:

I like her. Yeah, she's a friend.

Jane:

She's awesome. She's totally awesome. And she wrote a beautiful piece for my predictions for 2023. And she's so right. And being in the media world, I mean, she literally was so tired she passed out and gave herself a bloody nose because she passed out on her desk. And it's like, "There's limits, you guys." And if the pandemic taught us anything, it's that. It's like, what if you took FOMO off the plate? What do you really want to do? What's really important? What really needs to happen now?

Dave:

What's your gratitude practice?

Jane:

Oh, it's really simple. I mean, I'm not rigorous with a lot of this kind of stuff.

Dave:

Is there a service level agreement or uptime metric for your [inaudible 00:22:29].

Jane:

I do track my biomarkers, but beyond that, I don't have... I appreciate... For so long, geez, I was running companies and had hundreds of employees and had little kids and had to be places on time and investors and all of that.

Dave:

I don't think people know what a stud you are to this day. You've done so much in your life. So, yes-

Jane:

Well, thank you.

Dave:

Okay, so you were all into that. But when did gratitude come into it, when did it start?

Jane:

I actually, I naturally come by my gratitude practice. I am ridiculously grateful. I am ridiculously joyful and grateful. Yeah. I mean, I'd be sitting on a traffic jam on the bridge and it's like, okay, it's all okay, because when I get home, I have a Meyer lemon tree in bloom, and I'm going to stuff my face in those blooms. And that smell, and the fact that I'm going to pick one of those lemons and make a roasted chicken with that lemon, and it's all going to be fine, and my family's going to be there and it's all good.

Dave:

I had a Meyer lemon tree in Palo Alto when I was there, and yeah, they're pretty amazing. So I'm with you there.

Jane:

A well, a freshwater well, or a hot spring, and a Meyer lemon tree, it's like, I don't need a whole lot more than that.

Dave:

If someone came to you tomorrow with cyborg implants that were going to make you live longer and give you some robotic parts, would you think about it?

Jane:

I'm definitely thinking about it. Oh, absolutely. Absolutely. No question. I think that's where we're all heading. I really do. I mean, I think-

Dave:

Isn't that scary? What if the Meyer lemon didn't taste the same?

Jane:

Well, I think we start to... I mean, we're talking about the distant future, not the immediate future.

Dave:

So by then we'll have enough glyphosate evenly distributed around the globe. You don't have to worry about the Meyer lemon or I just got dystopian again.

Jane:

Yeah. I actually think our humanity is pretty powerful, and I actually talk about this a lot. I just raised this recently. So one of my heroes has been John Markoff because he was the technology correspondent for the New York Times for 30 years, and he was doing really important work at the beginning of the digital revolution, helping us piece together some of the security issues and privacy issues, and tracking the culture clashes that were happening between the hackers that were just using their brains to figure out, oh, where's this going? What's it mean? And what can I get around that paywall? And like, oh, well, that's not secured. It's like, oh, check it out. There's a giant hole over here. It's useful work to show us where our vulnerabilities were, versus what's now called the dark web and the people who are just evil and who are trying to do things to steal things from other people or manipulate the situation.

But anyway, John wrote a book not that long ago, sometime in the last six, seven years, I want to say, called *The Machines of Loving Grace*, which is a Richard Brautigan poem, and they were all looked over by *Machines of Loving Grace*. It's fabulous. If you have not read that, I highly recommend you pull it up again. But in that, and this is the amazing thing that John superpower was that he didn't just track ideas, he tracked friendships. And he tracked who knew whom and whose ideas were being worked out in intellectual boxing matches with others. And he tracks it back to John McCarthy and Douglas Engelbart, who both had labs at Stanford back in the fifties. And I had the extraordinary great good fortune of meeting Douglas Engelbart at one of John's birthday parties when my son was three months old. It was like, "Look, I gave birth to a geek. Will you please bless him?"

But Doug did the Mother of All Demos in 1968 where he showcased the metaphors that would allow us to understand how technology correlated to the work that we were doing. So it was everything from the desktop, and folders, and hierarchies, and the mouse, and computer user interfaces, and all that great stuff. Doug was a humanist at heart, and he said-

Dave:

As do I, yeah.

Jane:

... as we need to be because this is the future we're building, so keep humans firmly centered in your vision. And let's come up with things that enhance humanity. And so Doug designed them around human creativity, and he called his lab, oh my God, it just literally flew out of my... Human Augmentation Lab.

Dave:

Yeah. Human Augmentation. Yes.

Jane:

Whereas John McCarthy was like, I want this algorithm to generate the next iteration of the algorithm, and see how far that goes, and see what it can do. And that's the world that we're terrified of. And so if we were able to love ourselves enough, we are human being. Human is a good thing. Humans can be taught to live in harmony with the other species on the planet. We can learn how to use biological forces for good to reduce the amount of water we consume, reduce the amount of pollution we put out, reduce the amount of pesticides that are required, reduce the amount of fertilizer that's required. Harness the nature itself in ways that put us in harmony with everything else. Then we'll learn to love ourselves, and then we won't want to replace ourselves with some superior creation. That's my big vision.

Dave:

To love ourselves enough that we don't need to replace ourselves. Where do you draw the line between more than human or just better humans, like smarter, faster, happier, stronger, more expansive, more able to take care of the earth. How do you know where it is?

Jane:

Right, right. Yeah, it's a really good question. We've been talking about this for a long time. My whole thing is, what is the strategic plan for the future of our species?

Dave:

That's a good question. Do we have to ask China? Because they have a 500 year plan, we don't.

Jane:

I know. I think we should ask, and I think that their creative brief might not be the same as ours, and I'm pretty sure their product roadmap is going to be radically different too.

Dave:

Different logos and everything too.

Jane:

Totally. Totally. And who's [inaudible 00:29:15].

Dave:

I really like the way you think, Jane. I think your brain is awesome.

Jane:

Yeah. I think a lot about my kid's peers. Do I want my kid to be the smartest kid around and no one else can relate to him? Probably not. Neal Stephenson, Seveneves.

Dave:

It's beautiful book. I've been trying to interview Neal, but he's reclusive. I've wanted to interview him. I think he's one of the best authors of the last hundred years. Yeah.

Jane:

Oh, Snow Crash had a huge impact on me.

Dave:

On the whole world. That is a book that created a lot of the internet. It's amazing. Guys. If you've never read Snow Crash, it's one of the most influential books you'll ever read. It changed my life when I was deciding between electrical engineering and computer science and all that stuff. And it was like, yeah, that's where we're going.

Jane:

But what I liked, and maybe, yeah, we don't want to give it away, but it takes all kinds. That's the answer. It takes all kinds. I think the idea that there's only one way to be human, and the smartest human is the best human. Or even the steam human is the best human.

Dave:

It's the most loving human, is the best human in the world that I want to build.

Jane:

Right. That's it.

Dave:

There's another famous science fiction author named Alastair Reynolds who's really thought about things in a great way. Are you familiar with his work?

Jane:

No.

Dave:

He describes two future branches of humanity with a really complex universe. And one of them are the cyborg enhanced humans who make a hive mind, and he calls them Conjoiners. And then there's another group whose names I forget who are about hacking our hardwares. So one of them is we're going to modify biology and we're gifted at genetics, and we can do all these things with life. And another one is, we're going to

augment life with hardware. And they become two different segments of the future. Which of those do you think is most likely?

Jane:

That's a really interesting question. And I'm wondering if the difference will be... I mean, the neuromorphic computing people are making great advances.

Dave:

They really are.

Jane:

And the new materials people, there's so much happening on that front that I'm wondering if that's a distinction that will be meaningful at the point in which we're talking about significantly enhanced humans.

Dave:

It feels like when you start getting nanotech really, really correct, it's going to look a lot like life anyway. Wired has been something that really did. It was the first time I ever read a magazine, I'm like, what these people get me, they know how to think.

Jane:

I got to tell you this. When we first launched the magazine and set up a, I think it was like AOL or no. I guess, we had an email account. That's what it was like subscriptions at wired.com.

Dave:

Copy server or something? Or the well, or something?

Jane:

No, we had our own server right from the start.

Dave:

You had your own. Of course, you're a Wired. Yeah. Cool.

Jane:

Yeah, yeah. No, we had the best. We had Brian Behlendorf was there managing our server. We had Jonathan Nelson who basically invented programmatic advertising. We had amazing people who helped us. John Gilmore, one of the founders of the Electronic Frontier Foundation. I mean, these were the people that helped create our infrastructure. But anyway, our subscription people would spend all day long emailing

with people who would say, "I'm 13, I'm gay, I'm black, and I'm a hacker. And I didn't know there was anyone else out there like me." And they'd call on the subscription line and just talk for hours. And it was the most extraordinary thing. There's just huge outpouring of pent up intellectual fervor around, yes, this is exciting. Yes, it's exploding. And yes, what are we going to do with this? It was just extraordinary. We were really the red hot match that just.

Dave:

Yeah, I never felt really understood by a group until Wired Magazine. I never thought of that. Yeah.

Jane:

Yeah, yeah.

Dave:

Thank you.

Jane:

Well, I don't think we realized the extent of it.

Dave:

The world with the way you were thinking, the excitement that you had. You took something that wasn't cool, and you made it cool, and you built a community around it. That's hard. I know that's what biohacking was, but it's such very few people ever do anything like that in a lifetime. That's what churches do, or maybe punk rock or skating was like that as well. Tony Hawk did it, but it's... So, anyway.

Jane:

And let me just say, because you're giving me all the credit for NEO.LIFE and Wired, and in both cases, with NEO.LIFE, if it weren't for my editor, Jason Socrates Bardi.

Dave:

Yeah. You worked with that team. Yeah.

Jane:

Master's degree in molecular biophysics and science writing. And-

Dave:

Is that NEO.LIFE?

Jane:

That's NEO.LIFE.

Dave:

Your secret. Okay. I knew you had to have an ace in the hole on that because you are covering some cool stuff. And how do you fill that in one brain. You got some good people.

Jane:

Yeah, yeah. Yes, absolutely. But same with Wired. I mean, we had Kevin Kelly-

Dave:

Oh I love Kevin. He's a great guy.

Jane:

Of course, yeah. Lewis my partner, smartest man I ever met.

Dave:

So good.

Jane:

John Plunkett and Barbara Kuhr, our creative directors. John Patel, we had just incredible people. And then our collaborators, I mean, we had Neal Stephenson and William Gibson basically doing reporting for us.

Dave:

Oh my God.

Jane:

Bruce Sterling. No, I swear.

Dave:

These people created the future. They really did.

Jane:

Bruce Sterling wrote the cover story of the first issue of Wired.

Dave:

Yes. Yes.

Jane:

On the Future of War.

Dave:

You're so right. Oh my gosh. And I imagine if you're 20 years old, this is going. What are you guys talking about? We're talking about how everything that you care about happened is what we're talking about. Literally all of the things in the world that you expect and take for granted, it was this that made that happen.

Jane:

It's technology that made it happen.

Dave:

But this fueled the technology boom. Silicon Valley would've been only 40% as full if there hadn't been a movement around this. And I think you were at the center of the movement. I really believe that. Maybe I'm wrong. So were you taking acid back then?

Jane:

Oh, God, I was working too hard.

Dave:

So was I actually. I didn't ever have acid when I worked in Silicon Valley. I had started Bulletproof before I decided it was worth doing that in a controlled setting.

Jane:

But full disclosure, before we started Wired, we were part of the whole rave scene in London, in Amsterdam.

Dave:

You're ravers, of course.

Jane:

Yes, yes, yes, yes. And so we were publishing a magazine called Electric Word, and it was very cult-like. I met Timothy Leary back in those days.

Dave:

Very cool.

Jane:

And get this, virtual reality party. I was supposed to be putting together a virtual reality conference. And for brief moment, because we were writing the business plan for Wired, trying to convert Electric Word into Wired. And I thought, I can get a job with this other publisher who wants to do this virtual reality conference. And so there was this brief moment when John Perry Barlow and Timothy Leary came over to Amsterdam, and we had this party, and that was pretty fun. And we had a couple of Oxford graduates who'd come over from the UK. So yeah, we had a groovy little scene for sure.

And I have to tell you this. So I went to a Grateful Dead show when we first got to Silicon Valley, and I had this list of... Because I needed to get revenue in the door right away. Reid Hoffman says he launched the airplane and you put the wings on the way down. It's like, that is exactly what it was. And so by day, I'd be calling on Silicon Graphics, and Intel, and Apple and Microsoft, and everything. And then I go to this Grateful Dead conference, and there are all the heads of marketing tripping their brains out in that conference. And I thought, this is going to be easier than I thought.

Dave:

Ah, that's so perfect. So that was how it connected. I've been reading Rick Rubin's book on art and creativity that just came out. Have you had a chance to look at it yet?

Jane:

No, but it's on my list. Yeah.

Dave:

I had a chance to communicate with him about it, and I'll probably eventually have him back on the show to discuss it when he's time and availability.

Jane:

Nice.

Dave:

What I learned when I read it was that he sees entrepreneurship in building the future and the kinds of creativity that we've both been involved with for a long time. He sees those as art. And his rules for artists are so opposite of what I learned at Wharton, and what you would expect from business. But it seems like that's how all the technology change happens. So I'm starting to look at what I'm doing in business through his artist's lens instead of through the spreadsheet lens. And it explains some of the success I've had.

I started a company in five product categories at the same time, everything I did at Bulletproof was the opposite of what was supposed to work, but it just felt right, and it was entirely embodied. And it seemed to work. So there's just something going on in the world where we're making change more, and more, and more rapidly because the tools to enact something, you can just do it in the cloud instead of spending a million dollars on load balancers and stuff like that. So I think we're going to get faster and faster at our cycles of evolution, but it's going to look more and more like art. Is it accurate? Is that not accurate in your view of the world?

Jane:

Absolutely. Absolutely do. But there's also, it's the art of thinking laterally-

Dave:

You are listening to the Human Upgrade with Dave Asprey. But it's going to look more and more like art, is that accurate? Is that not accurate in your view of the world?

Jane:

Absolutely. Absolutely do. But there's also, it's the art of thinking laterally too. And one of the things back to my dad saying, you got to specialize. And it's like, I think we need to be good at not being experts in everything. It's really hard for an engineer or an MD/PhD type to step outside of their domain of expertise. And I feel really strongly about this, that yes, art and creativity are huge. And I think to the extent that we can unlock things, give people permission, take daydreaming time, and forest baths, and open minds in any way that happens, that's super important. And what I worry a lot about are silos. I worry about the walls that exist between academia, and industry, and government, and NGOs. I worry about the walls that exist between genomics, and neuroscience, and synthetic biology, and the future of food.

I worry about people becoming the world's expert in something that gets smaller, and smaller, and smaller. You go deeper, and deeper, and deeper into your hole. I mean, this whole genetically modified foods. I don't know how you and your listeners line up on this, but I feel like there's an opportunity to genetically modified foods in a way that prevents 40% of the vegetables getting stuck on the farm, because that's the current case. They never even make it off the farm. And then there's more waste in the distribution channel, and then there's more waste once it gets to the grocery store shelf. And that's why food is expensive. So let's stop the waste.

Dave:

Here's how I would say my audience thinks about GMOs. We all know that the companies who actually release GMOs are doing it so they can poison the soil with chemicals that are bad for the planet and bad for humans. So we don't like GMOs because of that. But we also know when you put in our thinking hats instead of our feeling hats, that you can actually use genetic modification techniques to do great good in the world. So I just had a guy doing a genetically modified probiotic that means alcohol is far less harmful for your system. So I'm like, okay, check the boxes, and either safety things and all that that are part of the consideration. So I don't have any feelings about GMO any more than I do about shovels, guns, or fire extinguishers.

It's what you do with the tool that's the problem. It is not the tool. And some people be very offended at that. And also, guys, I have no problem with vaccines. It's what you do with the tool. Give me a vaccine against getting old. I'll take it every year. Just show me it works and release the actual data and not over 175 years. And maybe we should open source all vaccine formulas while we're at it.

Jane:

Yes. Well, that would've been an amazing thing, wouldn't it? Yeah. Well, who was it? Who was it that said... Jonas Salk. Why didn't you patent the polio vaccine. It was like, because I didn't invent it existed in nature. It's like, you can't patent the sunshine.

Dave:

Yeah, not yet. Anyway. All right. Let's talk about that for a little while. If I could wave a magic wand and give you the ability to disband or modify the FDA in any way to create human flourishing, what would it be?

Jane:

So I used to think, particularly coming from Silicon Valley, that all government regulators are evil. Wired was at the forefront of the cyber libertarian movement.

Dave:

That's right, there with you.

Jane:

Right, exactly. And I thought, whatever's good for the internet is good for humanity.

Dave:

Doesn't seem to be true, though.

Jane:

And it's true at the beginning when the regulators have no idea what you're talking about. And that's why you need organizations like the Electronic Frontier Foundation, where I was on the board briefly at the beginning of the organization. And we spent a significant amount of time coming up with metaphors just to help people, how do we think about this? And I think what happened is the government stood back and they saw that it was good. And so it's like, let's just let Silicon Valley keep doing what it's doing, and it's generating a lot of wealth. And that money is going into our tax coffers, and it's going into our campaign chests, and it's all good. But that kept going too long. And so there is a point at which you think our Congress would be able to understand the technology or enhance notwithstanding, and that we would be better.

Chinese are much better at this. Most of the people in their government are scientists and engineers, which I think is a real problem in this country that scientists and engineers do not feel compelled to serve in Congress. And when they do run for office, they tend to have one or two planks on their platform, and that's never enough to get elected. And so I would be all in on helping to get more technocrats elected to Congress. So I think the FDA is by and large a good organization. I think I have experienced with the frustrating side of it, but a lot of my friends who are involved in the research say that on the research side, they're very open-minded and a lot of good can come of it. And so they're very much looking forward to the future. But there's two different sides. There's like-

Dave:

But there are good people doing science. The science people at the FDA don't have issue with that. The policy makers and all seem like they have a very heavy handed approach. I interviewed a former FDA enforcement officer who was working as a

freelancer, and she told me this verbatim. She said, "Dave, every other Thursday we would have a pizza party in DC and we would Google around to find who we were going to send enforcement letters to." She was not a scientist.

Jane:

Yeah.

Dave:

And those are the people who are harming progress in the U.S., and I don't take that personally. I've had reasonably good interactions with him in my business life as well. But I also know that some things are exceptionally expensive because of regulations that aren't helpful.

Jane:

Well, the thing that concerns me is the way we are now approving drugs. And we're approving drugs that have a lower and lower efficacy. And that to me is just evidence of the medical industrial complex, which we're going to hear a lot more about in the future.

Dave:

How are we going to hear more about it? Isn't chat GPT going to basically sit as an interaction between you and the world to make sure that everything you see is perfectly Orwellian?

Jane:

No, I don't think so. Because right now Chat GPT really can't figure out my resume. Do you know what I mean?

Dave:

Right.

Jane:

It's like, there's some really basic facts that it's still getting wrong. So I think we're-

Dave:

Okay.

Jane:

Still out from that.

Dave:

You're still out. How far out though? Two years, five years?

Jane:

To be honest with you, I have no idea.

Dave:

Okay.

Jane:

I have no idea.

Dave:

That's a really fair answer from a futurist.

Jane:

But I do want to talk to you about something that I think is a very, very, very exciting application of AI.

Dave:

Okay.

Jane:

Chat GPT and generating text and generating audio, I mean the people at Google have known for years that the end of truth is here already. And so this is just kind of playing out-

Dave:

Mm-hmm.

Jane:

And it's going to be lumpy. There'll be moments of truth, and there'll be great moments of great defamation and distortion, and we will have to muddle our way through and it will come back down to our humanity and our trust. And who can you look in the eye and trust? Did you see that woman on Twitter with three front teeth? She looks beautiful, but I don't know how many followers she had, a million followers or something.

Dave:

Wow.

Jane:

Anyway, yeah. But I'm really excited about AI in the medical field because-

Dave:

Yeah.

Jane:

It can help us discover new drugs, it can help us see things on x-rays that the human eye can't see. It can help us in so many ways, but I'm involved in a new initiative that is so far-reaching in scope and so ambitious and so bold and so optimistic, that I think your listeners would be really interested in this.

Dave:

Oh, do share. Yeah.

Jane:

Okay. All right. So, we sequenced the human genome 23 years ago, right?

Dave:

Mm-hmm.

Jane:

And that was a big deal, and it cost billions of dollars, and it took dozen years or more. And in the end, it was an enormous breakthrough, and it unleashed this incredible amount of innovation, which is helping us identify and eliminate, eventually eliminate single gene caused diseases, and will initially also help us figure out how to match the right drug to your tumor and all these other things. Very, very exciting. We can sequence kids at birth because it takes a long time to figure out what's wrong with a newborn, with a genetically inherited disease.

Dave:

Mm-hmm.

Jane:

Now we can just do that right off the bat, and the minute we start to see things not going, we can go, "Ah, this is what it is." It takes years for people to get diagnosed, and a lot can be done during that time. So huge breakthroughs. But in the end, as complicated as that was, and as brilliant as the scientists were who helped us do that, it's still pretty simple. It's just a string of code, right? Or two strands of code, but it's just code.

Dave:

Wow.

Jane:

And it only accounts for let's say 20 to 25 percent of disease, which leaves everything else.

Dave:

It's all epigenetic.

Jane:

Well, exactly. And it's your immune system.

Dave:

Mm-hmm.

Jane:

What's going on in your immune system. Your DNA and your epigenetics aren't necessarily going to tell you that. And the immune system is quite possibly the most complex thing known to man-

Dave:

Yeah.

Jane:

To humankind. And one of the reasons why it's complex is that it isn't just made up of the proteins and the molecules and the tissues, the cells, the organs of your immune system. It's also your entire omic stack. So it's your genome, your epigenome, your transcriptome, your metabolome, your microbiome, your lipidome, plus your exposome. So there's all this stuff happening already in your body, and then it's all the external forces, including the food that you put in your body. Including the amount of pollution in your environment, including the amount of stress that you're under. So all of those things make up your immunome.

And your immunome is not a static thing, right? The immunome you had as a newborn hopefully coming through your mother's birth canal is not the same thing that you had as a 16-year-old, which is not the same thing you have as a mother giving birth, which is not the same thing you have as a 75-year-old starting to become elderly. So your genome, your immunome changes over time. So it is a complex system embedded within other complex systems orbiting in a much more complex system, and how can we ever understand it? The pandemic gave us this extraordinary moment in time-

Dave:

Mm-hmm.

Jane:

Where we can actually use the collaboration, the global collaboration that has happened coupled with the extraordinary advances that we're making in machine learning right now to use AI to build models of the human immunome.

Dave:

Yes.

Jane:

So, I've talked to some very smart people about this over the course of the last year, and I was asked to join this organization three years ago. It's called the Human Vaccines Project, but because everyone's doing vaccines, they were thinking, what is the next frontier? Yes, it would be great to understand how this vaccine is going to affect these different populations, but how is anything, how is any vaccine or antigen or threat to your immune system going to affect you and her and him now versus 20 years from now versus in the future? So what is the bigger picture? Where are we going? So the Human Vaccines Project is rebranding to become the Human Immunome Project.

Dave:

Mm.

Jane:

And we convened a group of scientists, 60 of the most extraordinary minds. We had Eric Schmidt and the Nobel Prize winning immunologist, Pete Doherty as the honorary co-chairs of this meeting.

And we brought together immunologists, computational systems biologists-

Dave:

Mm-hmm.

Jane:

And machine learning experts, including, you probably know Stuart Russell.

Dave:

Mm-hmm.

Jane:

You know Stuart is top 10 people in the world-

Dave:

Yeah, famous guy, right.

Jane:

Literally wrote the textbook used at Cal and other college campuses around the world for artificial intelligence and brought them all together and said, "First of all, hello, can you hear each other? Can you talk? Can you understand what each other are saying?"

Dave:

Yeah.

Jane:

And secondly, we brought together, I mean the alpha fold people came, we had people from the Broad and Caltech and I mean-

Dave:

Mm. Okay.

Jane:

It was just like from the United States, from Europe, from the Middle East. And we said, let's define the human immunome. Let's figure out what data we need to collect and how we're going to collect it, and then let's put it into our models and see what it spits out. What are the limits of what artificial intelligence can do right now-

Dave:

Mm-hmm.

Jane:

And how can what it does right now advance our thinking? How can it enhance what we're doing experimentally in the lab, in vitro? How can we take in vitro and in silico and combine it? And how can the two of these things move the field forward? And it's an incredibly exciting time for immunology-

Dave:

Wow.

Jane:

Because of what's just happened with the vaccine, the virus itself, the mRNA platforms. How can we take everything that we have learned, and bring that over into this new way of thinking about immunology, which is moving beyond this sort of, okay, here's the B-cell repertoire and the T-cell repertoire, and here's the macrophages and the neutrophils, and here's what each of those things goes and does, to mapping it into a 3D model and then moving that model over time into a 4D space.

Dave:

There's something that's missing that's been kind of a through line in my last three books or something. And it's the notion that every cell and even subcellular component is at its core, an environmental sensor and a computer that runs very, very simple code. Sort of like a Stephen Wolfram's, A New Kind of Map, which you probably have in your mental database. For listeners, this is a book about how if you run very simple rules for infinite amounts of time, you get complex behaviors that emerge, like beautiful flowers and stripes on bumblebees and things like that. They aren't as complex as they look. They just come from doing the same thing over and over and over based on very dumb little rules. And I think a lot of our human traits, our lower human traits anyway. Our

egoic behaviors are emergent behaviors from subcellular decision making. And you can model that.

And Candace Pert, who discovered the opiate receptor says, and I would support, and there's lots of evidence that the immune system has its own intelligence that's separate from ours. And that would have to emerge from the component level behaviors. And if you take AI and you model immune behavior based on, well, what are the environmental inputs? And what are the decision making things in each node? You have a complex system that you can easily model that's very different than that well, you slam a vaccine in and then that tells it what to do. But I know for managing router flaps and all this stuff and creating millions of computers all running together in a beautiful harmony or interviewing Lehman Baird from Carnegie Mellon about how crypto algorithms for establishing trust work, they're the same algorithms that mitochondria use for establishing trust amongst themselves, quorum sensing. So it feels like if you're going to be doing that kind of a thing, you have to look at the individual component behaviors and how they're communicating with each other. And we know the communications protocols now. But I feel like the network engineering and compute side of that may not, I didn't hear that person in that group. Maybe Eric Schmidt that person. He has the brain for that.

Jane:

Mm, interesting. Well, I have to say, one of the most interesting people that was sort of randomly, one of our sponsors sent her, was an ecologist and everybody was like, "Oh, we want the ecologist in our group as we brainstorm our strategy."

Dave:

Uh-huh.

Jane:

And indeed, she had some really brilliant insights to offer the group. So yeah, absolutely. We're just getting started. And this is a collaboration. This is a consortium. What we're trying to do is identify all the different researchers around the world who would have data that they could upload and share so that we can help build this model. And we're looking for people from industry, from academia, from NGOs, from, we've got Suma Swaminathan, who is the outgoing chief scientist for the World Health Organization on our scientific advisory board. And so, it has to be a global south involved right from the start because can't understand the immune system if you're only looking at white European males. And so, it's a huge opportunity and it is the right thing to do. It is the right time to do it, and we need all the support we can get because we're just a little tiny little organization taking on this potentially multi-billion dollar cost.

Dave:

It is as important as the human genome for sure, because we still haven't even figured out what makes a single cell when it's fertilized, what makes it turn into a liver versus a heart versus an eye. Right-

Jane:

Right.

Dave:

There's something guiding it, right? I have my ideas about that. Lots of people do, but it's probably not genes. In fact, it's provably not genes because all the cells have the same genes. So there's so much stuff we don't understand yet about all of that.

Jane:

Right. So what about Brian Johnson? Are you getting as good of results as he is?

Dave:

Oh, yeah. I like Brian. Well, he's only five years younger. I'm 11 and a quarter years younger, but maybe I've had more time to do it. So guys, Brian Johnson runs Colonel, which is one of the, and I don't want to say one. It is the most interesting neuroscience company out there. And I say this, running a neuroscience company, the 40 years of that, it's called Colonel. And he wrote an interesting piece last month or something. I haven't talked to him about it yet, but I do know him. I've communicated with him a meaningful amount and very brilliant guy. And he's like, "Look, I'm going to go on this program to just rigorously monitor my stuff." And like true biohacker style. And he's done a program that's actually pretty good. He'll find out in about three or four years that he's too vegan on it, and reverse his stance on fats.

But give him time. I know, because I went down that same path. But what he's saying is the rate that you can change your age is his measurement. So if you can make yourself biologically younger very quickly, that is of benefit compared to the total thing. I have questions about that, because having lost 100 pounds, I've had people lose 75 pounds in 75 days on my protocols. That is usually harmful because you dump so many toxins in the body when you do it. I don't have any evidence that says taking five years off your life in six months is better than taking five years off your life in three years. In fact, I think it's probably better to do it over time.

And I do though have to say that Brian's done a great job of helping us all think about anti-aging in a meaningful way. And some of the stuff we don't even understand yet. What Viam's doing with oral health. Some really interesting stuff about cancer detection from looking at microbes in your spit. And there's all these things that we're going to bolt on and pretty soon, the page that I would have or that Brian would have is going to look a lot like your immunome or the exposome, here's all the stuff I did. And it turns out the fact that I woke up and I looked at sunlight was way more important than I thought it was. But I didn't, or I didn't know that having a massage from a woman who is not taking birth control pills actually raises my testosterone 20%. And a woman on birth control pills doesn't. Okay, by the way, I think that's probably true. But especially if she's ovulating. But nonetheless, are we measuring this?

Jane:

Wow. Yeah.

Dave:

Oh, we could totally go into the species level effects of hormonal birth control on men, right? Because you imagine if a male's operating system is like, there's no fertile women anywhere because ovulation's everywhere.

Jane:

Right.

Dave:

We're like, what's there to live for?

Jane:

Wow.

Dave:

And our body will tell us there's nothing to live for. And then basements and video games look great.

Jane:

So do you think that's actually triggering your sperm production?

Dave:

100% percent.

Jane:

I have not heard that.

Dave:

It's part of the reason testosterone. Why would you make testosterone, it's biologically expensive to make it, when there's nothing to use it on? We are driven, like guys will do anything for that. And we don't know that's why we're doing it. Our bodies do that. There's a third of a second when they just make something look like, you know what, I'm going to conquer that thing. Because I know I'm going to get some of that pheromone that I smell. We didn't feel that, our operating system makes that hidden from us, but it's in there. So yeah, it's a part of it.

Jane:

Oh, I mean, I think there's also all the pharmaceuticals that get dumped into our water supply.

Dave:

Yeah, all that stuff.

Jane:

Well, not to mention estrogen.

Dave:

Oh, yeah.

Jane:

Right?

Dave:

Yeah.

Jane:

And I think women are going to be taking estrogen a lot longer.

Dave:

Oh, they are.

Jane:

It's not just birth control. It's going to be our longevity hack.

Dave:

So one, one of the-

Jane:

You know about this, right?

Dave:

I'm hoping that I can do for my daughter is-

Jane:

How old is she?

Dave:

She's 15. So when she's about, oh, 22, 23, I'll talk with her and assuming that it's possible to do it or fly somewhere where it is, you can take a little tiny piece of ovarian tissue, and you can bank it.

Jane:

Yeah.

Dave:

And then when menopause or perimenopause happens, you put that tiny little piece back in. And menopause doesn't happen for another 20 or 25 years.

Jane:

Yep. Yep.

Dave:

And talk about anti-aging.

Jane:

Yeah.

Dave:

We should be doing this for everyone.

Jane:

Everyone. So you have to read my story.

Dave:

You know about this?

Jane:

Totally. Oh my God.

Dave:

You're so well-rounded. My God. I want to hang out with you sometime. We're going to go out to dinner, right?

Jane:

Let's do that. Yeah, let's totally do that. But yeah, no, we've been writing about this. I'm super interested in women's health, particularly non-reproductive women's health.

Dave:

Yeah.

Jane:

Because what happens is the minute women stop reproducing, we start aging rapidly and we, our ovarian tissue ages two to three times faster than any other tissue in the human body. And if we can delay the onset of menopause, we can delay the aging of those tissues. We can not only extend our fertility, we can postpone our aging. And we can do that with some really simple tools that are already available that women all over the world are already taking.

Dave:

Like what?

Jane:

Which is estrogen and progesterone.

Dave:

Are you daring to suggest that bioidentical hormone replacement makes people younger? How dare you. Don't you know it causes cancer? Of course it doesn't. Guys, I learned anti-aging in when I was in my 20's from people in their 80's in Silicon Valley. The group used to be called SmartLife Forum, now it's Silicon Valley Health Institute. It was started in 1993 by one of the co-inventors of ethernet. And when I was 27, was asked to be president of the organization. And I was the only person under 50 there. But I was so excited because I had my elders teaching me all the stuff that turned my brain back on. And these were nerds. These are people from Eslan and the Xerox. They're-

Jane:

Park, Xerox Park?

Dave:

Thank you. Yeah. You will see people who claim that all these things are bad when you age, but they're the people who are really not aging well.

And you look at someone who is profoundly healthy and full of energy. I still remember an 88-year-old friend named Mike who's on my board. He had more energy than I did, and I was 26. And I'm like, what the heck?

Jane:

Wow, yeah.

Dave:

Like if that can be done, we should all do it. And so I love it that you're talking about that because ovaries have, they're the only organ in men or women that have more than 15,000 mitochondria. Ovarian tissue has a hundred thousand mitochondria per cell.

Brains and hearts have 15,000, everything else is much lower than that. And my view of mitochondria is environmental sensor, computer, and then manufacturing plant that makes electricity or makes sex hormones or makes chemicals or folds, proteins, whatever. So it's all in one compute. It's sense compute manufacturer. And what I believe, and I don't have a study for this yet, but I just know because that's how stuff has to work.

The reason for that is that some process in the body has to select which egg of the couple billion eggs that are possible to select. So based on the previous, probably three months, but maybe six months of environmental inputs to your entire system, including the exposome, including your immunosome, it picks the egg most likely to survive. Whether you're in a stressful time, whether a non-stressful time, whether there's enough nutrients, all of the sum of all that stuff. It does its best to have the densest compute node in men or women by a factor of five to make that decision. And then the one egg, and then that egg selects which of the multiple sperms can get into it. And the egg actually runs the selection process, not the race to the first thing, which is only thing.

Jane:

Right. And that the sperm collaborate.

Dave:

Yeah.

Jane:

The sperm actually collaborate to send the best one forward.

Dave:

Having a wing man.

Jane:

Yeah. So who's pushing a lot of this, first of all, that's a super interesting theory. I love that. But you know who's pushing a lot of this female reproductive longevity research is Nicole Sheridan, who is [inaudible 01:07:26] Brens ex-wife.

Dave:

Ah, I should talk to her.

Jane:

Yeah, you totally should. Yeah. So she collaborates with a woman named Jennifer Garrison.

Dave:

Yes.

Jane:

Who is a neuroscientist by training. She's over at the Buck Institute now. And they have formed an organization where they are giving out, I think it's \$10 million dollars a year for the next 10 years to different researchers working on different parts of this problem. There's a whole bunch of startup companies, most of them run by female CEOs.

Dave:

Wow.

Jane:

They're looking to find other solutions for fertility, for extending fertility, for preventing female aging. There's a whole thing. So my story on NeoLife is called Canceling Menopause, and a lot of those people are referenced there.

Alicia Jackson runs a company called Ever Now, and she was a DARPA program manager, biological funding synthetic biologist from training.

Dave:

Okay.

Jane:

She's now CEO of Ever Now, and they have collected more data on women and menopause than has ever been collected before in the what, two years or something that her companies existed. The largest trial before that collecting menopausal data is like 3000 women. It's like more than 50% of our population are menstruating, but we are not going to collect data about it. This is not of interest to us. We are not going to help women through the process. It's just something you got to suffer through. It's going to be painful and awful, and you'll probably lose your job and your husband may leave you and your teenage daughter will probably hate you, and you'll shrivel up and die and no one will ever look at you again. But that's just your lot in life. So buck up, girly. Head for the back room with your other girlfriends. And it's a whole new generation of women are saying, "Fuck that. No, thank you."

Dave:

None of my friends going through menopause are in that mode. They're more like, "Fuck me." And they're maintaining their sex drives, they're actually enjoying their life, and they're really taking it differently than the last generation. They're fully expressed happy humans, and sometimes really frustrated because, why the hell is my body doing this? But it's a different animal and they're all on hormone replacement at the right levels, the right doses. And when they do that, all of a sudden, this is the happiest I've ever been versus the most miserable I've ever been. It feels like there's a way.

Jane:

Exactly, and here's the scary thing. When I first went to my gynecologist and I said, "I'm losing my mind. I can't think anymore, and it's a problem." That's my tool. That's what I have to work with. And if this is not working, I'm-

Dave:

It's terrifying.

Jane:

Terrifying. I was like, "Okay, I understand why this is happening, but you got to help me." And her response was, "Well, let me write you a prescription for an SSRI." And I was like, "Wait, I'm not depressed. I mean, I'll get depressed if we don't figure out my brain fog. But why would you give me an SSRI?" And that is their solution. And the fact is that's going to make your brain fog worse. And they were saying at the time, of course it's going to give you a heart attack, it's going to give you breast cancer. You can only be on this for a short amount of time. And then thank God, that whole study was proven wrong because they waited. We're talking about the Women's Health study where they did not give the hormone replacement therapy to the women until they were significantly postmenopausal. And in that case, it's a shock to your system to suddenly start loading it with a bunch of hormones again.

So the idea is that as your hormones begin to taper off, you just boost them back up to normal levels. I'm taking a tiny, tiny little dose, literally almost the smallest dose you can take.

Dave:

There's a protocol I wrote about in my anti-aging book from a really interesting researcher named T.S. Wiley, who's just widely, widely controversial in part just because she has a combative nature. And when I interviewed her, I said, "How can you do this pattern matching stuff?" And she says, "Oh, I had a tumor on some part of my brain or cyst. And ever since that happened, I can just absorb research papers like no one's business." She wrote *Sex, Lies, and Menopause*, which is a famous book in the field. And she has a protocol where every month, every day is just slightly different to mimic monthly cycles. I believe that's probably the best protocol out there. It's just a lot of work to get someone who can write that script for you and all, but it actually makes your body mimic full fertility cycles. And all of the members of the live audience, my mentorship group who are on that protocol, I'll say that, wow, this is the best ever. But we've got to make accessibility and availability for that sort of thing, work and more research.

Any thoughts on day-to-day changes? Or do you just take a flat dose all the time?

Jane:

Excuse me. No, I just have a patch and it just delivers the dose.

Dave:

So it's a dose on a patch, it comes up a little bit, then it drops off and you change the patch every week or something?

Jane:

Twice a week. But I don't notice it.

Dave:

Twice a week.

Jane:

But I got to tell you, my insurance company periodically switches it out and when it comes, it's printed with the manufacturer's name on it. Is there not a single woman on your team? Literally not a single one. And if there is a woman on their team, how could she let that go out the door?

Dave:

Wait, because the logo doesn't match the handbag or what?

Jane:

Yeah, exactly. Although being all matchy match is so 20th century. No, actually, the bigger issue is why is it a piece of plastic adhering to my skin and not the cream? And the answer is because the cream costs like three times as much and won't get reimbursed by insurance company.

Dave:

Really?

Jane:

So you have to have this. Yes, yes.

Dave:

Do you still rely on your insurance company to do anything?

Jane:

Yeah. Less and less. Why do I put up with that? And I'm literally on the verge of saying, "This is ridiculous. I'm just going to pay it."

Dave:

I don't. If I'm injured in a major way. But you have to value your time, and you only have so much time in the world, and every minute you spend on the phone with an insurance person trying to get a \$100 reimbursement, it might take you 10 hours to do that. And

they know it because they're paying their call center people \$8 an hour and then the math worked out for them. Yeah, you're going to give up and it's-

Jane:

Every minute spent on the phone with your insurance company takes an hour off your life. That's the equation, I'm pretty sure.

Dave:

Okay. I'm writing that down, the [inaudible 01:14:05] with Moore's Law. Okay. It's definitely something like that. So I actually think insurance companies are one of the main reasons we're having health problems in the U.S., is that they don't allow even good doctors to actually treat patients anymore.

And they've written absurd policies and all that. So I would say the vast, vast majority of the best medical professionals I know have opted out of taking insurance, which isn't cool, but they're just saying, "I have to hire five people and I lose money if I have to take insurance. It doesn't matter how much they pay me because I have to fight for everything, and I spend all my time on the phone and they know it. And I'm on the phone with a guy in a call center who isn't a doctor." So they're just saying, "No, I'm not doing it." And I think that is the future your insurance is good for like in Canada, where I used to live, if you get in a car accident, you're not going to go broke. They'll take care of you. But if you have a chronic illness or you want to upgrade-

Jane:

The number one cause of bankruptcies in America is medical bills.

Dave:

Yeah. And they're not even useful medical bills for the most part, \$18 for a cotton swab, it's unconscionable. And I think until we fix that system, a lot of the stuff we've talked about, the flourishing humanity, it will not happen in the U.S. until we get insurance companies and we basically remove them.

Jane:

So here's the thing, it's not just the insurance companies. It's the fact that we have a complex system and it's full of conflicts of interest and we are not aligned. And so it's the insurance companies, it's the pharmaceutical industry.

Dave:

They're driving the insurance companies. There's that, yeah.

Jane:

Yeah, but they're all across purposes is the problem. They have perverse incentives to work against it. You know who's super eloquent on this topic is D.A. Wallach.

Dave:

Interesting.

Jane:

I had lunch with him one day, and he just went around the table to all the different players involved in the healthcare system in America and the pharmacy benefit managers, those are the ones who most people want to dump on all the time, because those are not the people at the conferences I go to. And so they're the ones that... No, the real problem is with the pharmacy benefit managers because they're the ones who are negotiating the price arbitrage. But he was effectively presenting their worldview and what they're trying to do, which is buy in bulk and sell at a lower price to other people. But the problem is their incentives aren't aligned with the insurance company, which aren't aligned with the providers, which aren't aligned with everything else. So it's the complex system. No one player is inherently evil. It's all of them together following their line of interest, doing what it is they're supposed to do in our system that makes it fall apart. So this is a complete failure of the free market.

Dave:

It's emergent phenomena. And unfortunately, there's a stable equilibrium. And if you're listening to this going, "What are you talking about, Dave?" There's places where a system will naturally come to rest. It might not be the optimal one, but there's places where it'll just do that. And I think that most profitable equilibrium you'll ever reach as a business is you have a product that does the opposite of what it says, and you sell it to people to solve the problem. And I'm talking about diet soda. It makes you fatter, so you'll drink more of it and you will provably make more money in models that way versus selling a product that actually helps you lose weight. Because if people will lose weight, then they'll stop buying your product.

Jane:

Right? You're sick, so we're going to sell you this pill, but now you're going to take the pill for the rest of your life.

Dave:

And I don't think it's evil people for the most part, doing it. I think it's emergent behavior of complex systems. And that's one of the problems in our world right now. And it's one that maybe AI will be able to spot and solve. Within four years, by the way, I have a track record of being exceptionally accurate about the future. But I always think it's going to happen 20 years before it happens.

Jane:

Sooner? Right, yeah.

Dave:

I think as I've aged, I've gotten better. So I added a couple years to it. And I also know that I'm weird when I say this, but I would be to the point of voting for an AI before I

would vote for a human within four years. Because at least I would know what its actual end goal settings were. I just want to know what the direction of the system is because I know when I vote for a human, they don't do what they say. And I know with an AI, we would know that at least it's moving in that direction, and that would be amazing.

Jane:

That's a gross simplification, Dave. I'm sorry, I can't really, I'm not going to let that one stand. Yeah.

Dave:

Okay, take me down. Seriously, right now, I don't know. In fact, I'll be really, really transparent. When I was 18, I did huge amounts of research. I was all excited to vote, but I tracked whether people did what they said they were going to do. And I was like, "Oh my God, why did I spend my time on all this?" Because people don't do what they say. They say what's necessary to get elected, which is how the system's designed, and they do whatever they want based on whatever influences they have, which are all non-transparent. An AI system would just be more transparent. That's all I'm saying.

Jane:

Except that that's not the way AI actually functions. It's all based on emergent behaviors. It's all based on cheats and here's my goal and how can I get to that goal faster, better? And that's the problem. And a lot of times, I'll never forget the artificial life experiments that this ecologist biologist was doing down in Costa Rica, and he was studying the law of the jungle basically. And he created these little digital beings and imbued them with very simplest things of life like you got to get resources and you got to reproduce before you die. And he created this thing and set it loose, and it was simulating the jungle, except that the code that the winning species was using made no sense to him. No programmer would ever have devised that code. And it's like flocking behavior in the Boids, those early computer simulations of birds. They would be set up with really simple rules, and then suddenly, flocking behaviors would emerge in the digital birds. There's stuff that we can't anticipate.

Dave:

That's the Stephen Wolfram models, and his math does explain some of that, but it's hard to predict without a simulator. He's the guy who invented it was it Mathematica or MATLAB, one of the two.

Jane:

Mathematica.

Dave:

That everyone uses for simulations. And so you get to the point where what I would want to do is have the AI system make recommendations, and I just want to be able to vote for the weighting of outputs. So what matters most, and for me, actually medical

freedom is very high because I would like to be able to choose what food I eat and what medications I take. And anyone who wants to do that, all of my vote goes against anyone who's going to stop that. And actually, all of the force of my physical actions if it comes down to it. So that's non-negotiable for me, so I would heavily weight that. But someone else was like, "Just make me safe. I'll give all my stuff to whoever." Okay, you get to vote too on the outcome, and then we end up having a set of weighted principles. Otherwise, I don't know how we're going to do this as we have more and more people. But you're right, if the AI actually made decisions, it would probably cut everyone's heads off. We're not ready for that.

Jane:

Yeah. I don't know if you know this, you probably do if you run a neurotech company. But the whole idea of neuro privacy is just so terrifying. And it's so terrifying that the Chilean parliament already passed a law protecting the rights of individuals to their own thoughts. It's so fundamental to who we are, that there's literally a legal organization that is consulting with governments around the world on exactly this topic. And again, it's a knife, but it's a really powerful knife, and how are you going to use that? And in America, we're not so good at controlling the way people use guns and knives. Yeah.

Dave:

Yeah, neuro privacy rights to your thoughts and control of that data, it might be as important as genetic data. Right now, according to my neuroscience team, we have the largest database of high resolution brain scans of super high performing people along with all this socioeconomic behavioral stuff around it. So they're getting really excited about that. And I just want to be able to compare, how's my brain doing against other people who are doing everything they can to upgrade their brains? And there's different types and levels of upgrades and things that you might want to do, but to be able to train against that database. But the database is interesting, and we already have lost control of our genetic databases. The police use them without your permission all the time. I'm committed to making sure that doesn't happen with this stuff. And I can also de-identify, I don't need anyone's name in there, which makes it safer.

But I do hope that we learn huge amounts about the human condition, including some of the woo-woo stuff that the Vedic Astrologers may be right. And we're going to see it when we have enough high resolution brain scans and we just give it to an AI and say, "Compare that to all the stuff we didn't think mattered," and we're going to find that stuff about the women on birth control or not, and we're going to find out that stuff that says, "Your problem was you drank your coffee 90 minutes after you woke up, and that's only what boring people do," or whatever the thing is. So there's so much to be unlocked, and that's what has me hopeful and excited because we'll understand the human condition as long as the data gets out there and it doesn't just get put in a laboratory somewhere.

Jane:

So yes and.

Dave:

Yeah.

Jane:

I feel my DNA is unremarkable. There's very little of interest. I've talked to a lot of people who are trying to create systems where you are in control of your data. People make huge sums of money off reselling-

Dave:

Yeah, a crypto can solve that pretty easily. Yeah.

Jane:

But the problem is nobody wants my data. My data's not that interesting.

Dave:

I think the drug companies like your data, they pay a lot for it.

Jane:

Okay. But I don't take any drugs.

Dave:

But they still want your data. But if you don't take any drugs, you're less interesting. That's a fair point.

Jane:

And if I don't have a disease, I'm less interesting. And if I'm not rare thing or at a moment in my life or something like giving birth or dying or whatever it may be, I'm just not interesting. But the point is I feel unique in spite of that, and I feel like there are not answers that make sense for everyone. I'm pretty sure of that. I'm pretty sure that the diet that works for you is not going to work for me. And it's because your microbiome difference, your calorie burn, your glucose levels, all of these things are totally and utterly unique. I was so excited with Bullet Coffee. I so wanted to drink that, but caffeine is poison to my brain.

Dave:

Oh, your liver doesn't detox it well then? You have the genetic thing.

Jane:

And yet I've got the gene that says I metabolize it faster, but it gives me migraines.

Dave:

All coffee?

Jane:

It's all coffee.

Dave:

Oh, so you have a mast cell disorder probably within your... I'm kidding. But mast cells are a major part of the immune system that causes a lot of migraines, and it wouldn't surprise me if that was the trigger for the migraines. That's probably the most exciting in my little part of the world, the most exciting next step in biohacking and treating a lot of diseases is understanding the behavior of one component of the immune system. That's what's behind long Covid and toxic mold exposure. And a lot of migraines actually are mast cell things. So interesting.

Jane:

Interesting. Stuart Russell is on about the mast cells.

Dave:

Is he really?

Jane:

Yeah.

Dave:

You know the coolest people. I'm thinking about writing a book about mast cells because people don't understand it, and it's such a foundational thing. As foundational as mitochondria, I think. So, wow.

Jane:

Absolutely. But I thrive on animal protein, vegetables, and fruit. And everything else is pretty much toxic. Sugar, dairy, alcohol, everything else is pretty much toxic, grains.

Dave:

You figured it out and just talking about that, that's an act of service. And when an agency says you're going to be allocated this much animal protein and that doesn't meet my needs, your choice there is the one that trumps, not a regulator's, and that that's my big concern for the next 10 years.

Jane:

No, yeah. Absolutely.

Dave:

Is just that we may have people that say, "Well, you're going to eat crickets." I'm like, "Well, crickets aren't compatible with my operating system."

Jane:

I have lots of friends who are vegetarians and they eat huge amounts of wheat, and it's like, "I cannot do that." I know what happens when I do that and it's not good.

Dave:

And I think unfortunately, that happens to more people than recognize it. So there will be more learnings about that and about what foods are good for famines and what foods are good for flourishing. And I don't think that the overlap is particularly strong. We're wired to handle survival foods, but maybe, and I'm all over this, and I think you are too. If I could take a genetically engineered gut bacteria that let me metabolize dairy protein, let me metabolize wheat.

Jane:

French baguettes. That's all I want.

Dave:

That's good.

Jane:

God, let me eat-

Dave:

And also convert glyphosate into something that doesn't stick out my glycine receptors. If it could just do those things, oh my God. I'm like, "I'm a pizza man that day that happens," and I really hope we build that world because that would be awesome. I like pizza, I just don't eat it because it hates me. Are you on that camp? Would you do that?

Jane:

Maybe. If pizza were health food and I couldn't eat it, then yes, absolutely. I would take whatever I needed to take in order to eat that. But I don't necessarily think pizza, even if I could tolerate it, is what I want to feed my... I'm a Lamborghini, I don't know about you, but I pay a lot of attention to what goes into my space car.

Dave:

Damn straight. I love hearing that. We're going to put that up. It's exactly how to think of yourself. You don't feed peasant food like cold overnight oats, which is the highest phytic acid thing ever, that sucks minerals out of your bones. You do not feed that to someone who's going to go and start a company, who's going to go show up, or if someone's going through menopause. This is a food that makes you weak, but keeps you alive during the cold winter when the Lord of the house won't feed you something better. And to feed that to yourself as some kind of societal thing, it's offensive on its face.

Jane:

I don't know. I think there may be people who thrive on that, but maybe Irish people thrive on that.

Dave:

I don't know, the Irish famine wasn't good.

Jane:

I think their microbiome or something. The bacteria.

Dave:

I wonder.

Jane:

One of my best friends is Ghanaian, and she can handle the stuff, the Merylact stuff, and I just don't have the microbiome to be able to eat the foods that she didn't wash because she didn't need to.

Dave:

It's really cool, the diversity of biology we have, and that's why I hope the regulators stay out of it. Jane, you're one of the most interesting people in the world as far as I'm concerned. My biases are clearly Silicon Valley nerd and bionerd kind of stuff, and biohacking. I just want to thank you for your work in the world. I think you've had a meaningful effect on society at large for real. So thank you.

Jane:

Wow. I appreciate that, Dave. Thank you so much for reaching out. Thank you for an amazing, fabulous conversation. I think there's so much more I want to say and so much more I want to ask you. So I hope we can continue it.

Dave:

Next time I'm in the Bay Area, I will look you up.

Jane:

Please do.

Dave:

Also, I'll make sure you get a copy of Smarter Not Harder, which is my most effective biohacks for the five big goals book that's just coming out, because I think you'll know a lot of what's in there, but there will be a hierarchy of an organization of it that is going to match the way your brain thinks, and it's going to be useful for you.

Jane:

Cool.

Dave:

Smarter Not Harder is what it's called. Thank you so much, guys. Neo.Life is Jane's newsletter and wow, it's a good newsletter. I don't read a lot of newsletters. This is worth your time if you are a biohacker, and thank you so much.

Jane:

Well, I appreciate your time. Thanks for inviting me on.