

## **Bonus: Psychedelics and Biohacking Grow Up — The Psychedelic News Hour**

David Rabin:

I want to let everybody know that I am hosting the show, The Psychedelic News Hour, which we are so excited to welcome you to, with Dr. Molly Maloof, who is a physician, a ketamine assisted psychotherapist, as well as a Stanford lecturer. And I am a psychiatrist and a neuroscientist. I'm Dr. Dave, and I'm also a ketamine assisted psychotherapist, as well as an MGMA assisted psychotherapist. And we are hosting this show again to bring forth the discussion about psychedelics and biohacking, which is a really, really interesting and common topic of discussion, especially in the Valley right now, but in any sphere of technological creativity. And so we're very excited to bring you our featured guests this week, Dave Asprey, the founder of Bulletproof and Upgrade Labs, and one of the folks who's known for popularizing the term biohacking and really bringing it into our mainstream culture. From there I'll let you take it away, Dave. Thank you so much for joining us.

Dave Asprey:

I'm happy to be here. Thanks for having me.

Molly Maloof:

Thanks for coming. So good to chat with you.

Dave Asprey:

Oh yeah, of course.

David Rabin:

Immediately we thought of you when we started having these conversations, because the idea of altering consciousness to enhance our wellbeing, our quality of life, our human potential has been something you've been talking about for so long, with respect to lots of different modalities. I think a lot of people look to you as at least one of the first, if not the first person, who really started popularizing the term biohacking and really discussing how you can use these different natural tools that we have available to us to radically enhance our quality of life, and our abilities, and what we used to think was our potential, which maybe we're not so certain about any more. Maybe our potential is a lot greater than we actually thought it was or we were originally taught it was. And you have been a really incredible contributor to the field of health, about exploring and stepping outside of the box of what we're actually believe we're capable of and where we can go with our lives. And so we're really excited to have you here to talk about the intersection between, well, your work in general but also the intersection between psychedelics and biohacking.

Dave Asprey:

Biohacking became a word in the English language about, I think 2018 and strangely enough, my name is actually in the definition and people call me the father of biohacking because 10 years ago, when I started my blog, I said, "There's got to be some kind of a way to pull together the anti-aging crowd," and I'd already been running an anti-aging non-profit group for almost a decade, "with the neuroscientists, with elite athletes, and even with all these other things like deep sea divers, and people who were pushing the limits of human physiology, human biology, STEM cells, and things like that, and then human spirituality."

Dave Asprey:

And part of the reason that I wanted to do this is that I did do Ayahuasca with a shaman in Peru, I think in 1999, if I get it right, back when you could go down there and I said I wanted to do it, and they looked at me and they said, "Dave, you're white." And I said, "Yeah, I know," and they said, "this is only for locals. You'll throw up. Why would you ever want to do this?" And I said, "I don't know. I feel called to do this. I want to experience this." And I did on the side of a hill, looking out over some ruins called Sacsayhuaman. I try to say it not like sexy woman, but it sounds exactly like that when they say it. And it was a profound, spiritual experience, perhaps not as profound as holotropic breathing, that I did with Stan Grof shortly thereafter, but in the same universe.

Dave Asprey:

And I just realized you cannot talk about, "Oh, I'm going to live forever," or, "I want my IQ to be 20 points higher," which is entirely achievable via different methods, without also addressing the elephant in the room, which is spirituality. And I believe that plant medicines, the things I do at Burning Man, ritual, all of those are incredibly important to the human experience. And if we just say, "Oh, we're meat robots," like some of the anti-aging transhumanist crowd, you're missing the point here. And all of the states of high-performance are altered states. Otherwise, they would be average states. So that's why psychedelics are part and parcel, or maybe we just say that's why altered States are part and parcel to accelerating yourself as a human being. It looks to me like different plant medicines and some synthetics can open the doors for you to step through and learn about these states. There are almost always alternative methodologies.

Dave Asprey:

Some of the neurofeedback work that I do at my neurofeedback company, we actually have the ability to help you get into the same state that you might get into from a plant medicine, and we're actually running a few experiments now to see if we can tweak the protocols and settings to make it more accessible, because let's face it. If you have certain kinds of life insurance, certain kinds of legal risk, or certain belief systems, whatever else, you might not want to do plant medicines, or maybe you have a problem with methylation, and maybe you shouldn't take [inaudible 00:05:11], DMT because it's going to take you three days to get it out of your system. And all of these are not things that should prevent us from seeing what happens when parts of our brains chill out and other parts of our brains can come forward, so that may be an opening. But where do you guys want to go with this? Do you want to go how do you get there without drugs or what?

Molly Maloof:

I have so many things to say just based on what you just said. So first thing is, is that the funny thing about your career that's just so interesting, is about five years ago, I started working for a company and I was being somewhat labeled as a female bio-hacker. And one of my bosses was like, "Oh my God, you do not want to be a biohacker. That's just a trend. That's just a buzz word. And that also implies that you're going around the healthcare system. You don't want to be known for that."

Molly Maloof:

And actually looking back, he was completely wrong because not only is being a biohacker something I'm very proud of but also it's something that is beyond a trend now, it's actually an entire market. There's companies, and startups, and products, and services, and all sorts of things that are coming from this movement. And I think biohacking is the seed that's being planted for this consumer driven

healthcare system that's emerging from the demands of what consumers have that they're not getting from their current healthcare system, which is like enhanced resilience, better brainpower, longer life, all these things that people want but we can't get from healthcare right now.

Dave Asprey:

That's exactly why I made biohacking a movement. That's why I did not trademark the term when I could have, because I wanted it to be much greater than me and it was specifically to disrupt medicine. And I don't mean the kind of medicine that you practice and that so many of my dear friends practice, I mean the institutionalized system of medicine that's trying to remove healers from medicine and take that away. So that basically healers become robots and you have three minutes per patient and you will follow this algorithm for each patient, that is actually not healing and it doesn't work. And it didn't work for me when I weighed 300 pounds, it didn't work for me for a lot of the health problems I had, I had to go do it myself. And frankly, I was pretty pissed about that when I started on this journey and it's not okay.

Dave Asprey:

So there's a certain amount of health freedom that's in there that says, "Look, it's my biology, my body, my right, and if I want to put a plant medicine in there, that's my right. And if I want to try a therapy that some people think is too risky but I don't, it's okay for them to be wrong but it's not okay for them to prevent me from having access to something that I deem is best for me." And there's a very big problem with that. So thank you for stepping up and being an early doctor to say, "I'm a doctor and I'm a biohacker, and it's because I want full access to the tools that are going to allow my patients to heal," like ketamine which is such a cool substance.

Molly Maloof:

Totally. And not just heal, but thrive and flourish. Isn't this what medicine should be about it? It shouldn't just be about like, "Okay, you're fixed. Now we're going to kick you out of the hospital as soon as possible." It should be about like, "How can I help you become the best possible version of yourself so you can contribute to society, and your family, and your community in ways that are generative for the world." And I have to say, that what I love about your podcast is that you have so many doctors that have been really fighting the good fight. And it's almost like you've galvanized them in a way. Doctors go on your podcast and it's like they finally get this spotlight that shows that there actually are different types of healers out there. And ones that, by the way, are using really cool technology. Sometimes it's psychedelics, sometimes it's wearable, sometimes it's neurofeedback, but it's doctors doing things differently. And I think you've been a champion of those physicians, and I really want to thank you for that because it's really important work that you're doing.

Dave Asprey:

Molly, that's really kind. I know I filled more than a few practices and it takes a certain kind of courage to stand up, the way you have, certainly the way David has, and to say, "I am going to do something that is not the current standard of care from the 1970s," because every time you do that, you know, at some back of your mind, are you putting your license at risk? Are you putting your livelihood, your 12 years of schooling that it took to get to have this precious ability to be a licensed healer? And so there's this inherent pain that I see. I'm married to a doctor and so many of the people I respect, the very best doctors, have been attacked by QuackWatch, which is run by a doctor who's never treated a patient.

And his job is just to go out there and say, "Anyone who does something new, interesting, or impactful is a bad person." And he goes after their reputations.

Dave Asprey:

And so one of the things that has been a career defining moment for me, I set a goal about 15 years ago. I said, "I want to be listed on QuackWatch." I'm not a doctor, I don't qualify. And I got called out on the front page of the USA Today and they used Steven Barrett from QuackWatch to discredit my bulletproof coffee thing, which helped people lose a million pounds. I'm like, "Okay." But for me, that was such a career victory because the people that I know and respect, the people who put their careers on the line, moving medicine and healing forward, moving human progress forward, they all get targeted.

Dave Asprey:

So now that we have a biohacking movement, now that we have functional medicine, and now that we have a collection of clinical studies showing that things like ketamine, or mushrooms, or MDMA actually help with trauma, and that trauma causes physical ailments. It's getting to be hard for the skeptic naysayers to just sit back there, cross their arms and say, "You're a bad person. You're not a good doctor." Because the patients also know, we talk to each other. And there are millions of biohackers now who say, "Actually, I'm going to partner with my doctor, and I know I've got stuff going on and I'm going to find a doctor will work with me." So I feel like there are cracks in the insurance driven system.

Dave Asprey:

And I also feel like you can take someone who's relatively fundamental in their belief systems, someone who's 50, someone who doesn't believe any of the spiritual stuff, and you can sit them down and give them ketamine in a therapeutic environment, and they come out and they go, "How did I not know? Okay. I'm making progress." They get unstuck and then they lose the weight, then they stop acting like an asshole and all these incredible things happen, but it wouldn't have happened unless someone was willing to say, "I'm going to use ketamine, not as a tranquilizer, but as a therapeutic agent."

Dave Asprey:

I've also got to say, you guys, with what you're doing with ketamine, it's legal everywhere. It's widely available. It's well understood. And I have so much respect for the people doing work with medicinal mushrooms and MDMA, like [inaudible 00:11:45]. But the problem is that that is a 20 year fight against entrenched drug law, whereas right now we can heal people with ketamine. And the difference between mushrooms and ketamine for the average trauma healing isn't big enough to worry about right now. Let's start with ketamine, and let's get people on the path and let's continue legalizing the others.

David Rabin:

Yeah, I couldn't agree more, Dave. And I think you really addressed that well, especially when hearing you talk about your own personal experiences with ketamine and the idea that going back to, for a second, what biohacking is and why it's been a stigmatized term. Psychedelic also is a stigmatized term. We often think of psychedelic as only referring to drugs or substances that induce these altered states of consciousness. Whereas, that really couldn't be further from the truth. Psychedelic refers to altered states of consciousness that can be accessed with meditation, holotropic breathwork, and ketamine, and then plant entheogens, and plant medicines, as well as soothing touch, and music, and sound baths. And there's all of these different ways to access these altered states of consciousness that facilitate

powerful transformative psychedelic mind manifesting experiences that promote healing, or growth, or personal transformation.

David Rabin:

Similarly, with the word biohacking, I think a lot of people... And I remember when I first learned about biohacking in the medical community, as a Western trained psychiatrist, the way that I heard it talked about was this is artificially altering your body to change things about yourself that are unnatural. And that is such an incorrect understanding of the term because biohacking doesn't refer to natural or unnatural, or weigh out one or the other. It's about how to use whatever tools we have available, whether those are, in my mind, I see them as thought tools, technological tools, food tools, anything we have available to us to be able to help us cope with the stresses of modernity and really thrive as humans, as individuals, and as a community, as best we can, which I think is really incredible.

Dave Asprey:

It's very well put. And I really thought long and hard, it took me about six weeks to create the definition of biohacking. The first infographic saying, "What is this? Is there a space in it?" No, there is no space in biohacking after asking the whole community. But the definition was the art and science of changing the environment around you and inside of you so that you have full control of your own biology. And that's the uniting element. Someone who is in pain, who knows, "I don't know why I'm in pain. I don't know why I'm anxious all the time. Maybe I don't even know it's anxiety but something isn't right." That is a state of biology that you don't want, and so you want to change it. And plant medicines may be the way to do it, these other experiential things, or maybe you should stop eating the stuff that's causing biological stress that manifests as emotional stress.

Dave Asprey:

All of those are acceptable, but it's the full control. It also unites someone who wins the super bowl, like Nick Foles, with someone who says, "You know what? I just want to have enough energy after I drive to work for two hours in the morning and I drive home, to be with my kids and not yell at them." It's self-control and self-control is part of evolution. And it's of course, you're going to have to go to the gym and lift something heavier than you think you can sometimes. And maybe you're going to go use an entheogen that's going to push you emotionally beyond what you think you can handle. And you're going to learn something, and become stronger, and more functional, and more connected. And all of those are just environmental variables you change because your body listens to your environment.

Dave Asprey:

You can change your lighting. You can change your food. You can change the vibrations that you're doing. You can get more hugs and yes, you can use nicotine or caffeine. Somehow those are okay plant medicines that no one objects to. Well, some people object to smoking, which they should, but nicotine itself is different. But those are ancient medicines that have been used by huge numbers of humans and we don't have that response, or alcohol, but then suddenly say, "Oh, I want to use something that's from a mushroom instead of from yeast." And why we all lose our minds? I think it's from like 1960s, CIA anti-drug propaganda. I don't even know why we draw a line there but I don't draw that line there.

Molly Maloof:

Yeah, I think that there's definitely this new Renaissance-

Molly Maloof:

I mean, I think that there's definitely this new renaissance around psychedelics that's immensely more mature than what was happening in the '60s. I think there was, for certain, a free for all going on. And people have kind of grown up and they've learned that maybe we should do our homework a little bit before we just put something in our bodies. And so what I'm really excited about with the psychedelics movement is just the level of maturity that's becoming standard of care for either individuals that are experimenting with themselves or with physicians who are administering these medicines. There's a Google group of ketamine doctors all around the country that I'm a part of. And every single paper that is published in ketamine, we share. Every single news article that's anti ketamine, we discuss. We are constantly sharing protocols and safety recommendations. And one practice actually sent me all of their practice documents because I just requested.

Molly Maloof:

I said, "Look, I want to see how you guys are onboarding people. I'm onboarding people my way, I want to see how you guys do it." And the level of sharing of knowledge is so much different than I experienced in mainstream medicine, where everyone was trying to silo their discoveries and basically keep things to themselves. And there's a lot of problems with that in science right now, in research right now. And what I really like about the biohacking community and the psychedelic medicine community is just how much knowledge sharing is going on because everyone in these spaces are like, "We're just trying to figure this stuff out as we go. And we know that we're way ahead of the curve." And we know that things take about 15 years to go from the bench to the bedside and so what's so cool about biohacking is that there's actually a lot of discoveries being made in the biohacking space that make it to clinical practice.

Molly Maloof:

But we know there's a lot of things that are going to take a lot longer to get to the actual mainstream practice of medicine. But I really love... the similarity between biohacking and psychedelic medicine right now is just the willingness to say, we're going to have some courage and boldness and approaching things that aren't maybe stigmatized and saying let's apply science and reason to these areas and say, maybe we can do things fairly safely and run some experiments. And I think experimentation is something that's really, really profoundly a huge part of the biohacking movement that basically the N=1 concept really emerged from biohacking. It was like, so why are we only relying on randomized controlled clinical trials and how come you can't just experiment? What happened to the scientific method?

Dave Asprey:

Well, you probably remember the quantified self-movement. I spoke there in 2011 at Quantified Self. And I said, "Guys, gathering data is sort of like collecting stamps. It might make you happy, but it doesn't really do anything." The reason I wanted the word hacking in there is that what hackers do is they say I'm going to take control of a system even if I don't understand it all the way, but I'm going to have enough data. And it was, how do I take data plus experiment equals result? And for me, it was a survival issue. I had the diseases of aging in my 20s. I had high risk of stroke and heart attack on lab tests. I had cognitive dysfunction. I had arthritis since I was 14, pre-diabetes and I was doing what they told me, exercising excessively and eating a low fat diet and all that kind of stuff.

Dave Asprey:

And it was this feeling of exhaustion and anger when I looked at my thin friends eating double Western bacon cheeseburgers, and I'm having the chicken salad with no dressing and no chicken, and I'm still fat. And I exercise more than all my friends and saying, "You know what? maybe it's not that I'm eating too many lettuce leaves, maybe it's that this doesn't work." And what was left was I could give up or I could experiment. And I spent hundreds of thousands of dollars experimenting and it was unjust. I shouldn't have had to do that. There should have been someone there, a medical professional, someone who would have said, "You know what? Let's just gather some data and let's just see what's working." And the only people I could find 20 years ago who were doing that were the people who were 70 and 80, who were getting younger because they had figured it out.

Dave Asprey:

And that's why a lot of the biohacking techniques actually came from the anti-aging world. And then pretty soon you're like, "Wait, I still want to be happy. I want to perform. And I don't want to carry a large cognitive and emotional burden all the time that's invisible, but slowing me down." And that, almost by definition, is going to open the door to at least transpersonal experiences and probably some that involve these altered states, whether or not they're induced by plant compounds or others. It's funny, someone who's listening now was present the first time I may or may not have tried LSD. And the reason I say may or may not have is because when you make public statements about what you've done, it affects you legally. So someone with identical biology to me in a place where it probably was illegal-

David Rabin:

I think this is a great opportunity to segue, Dave, into how do you consider or do you consider psychedelics a biohack or psychedelic drugs, specifically, a biohack and why?

Dave Asprey:

I consider them a bio-hack 100%. and I've included that Ayahuasca journey in even the creation story of biohacking. I went to Peru and I had that experience. And about four or five years later, I said, "I've got to learn meditation from the masters." And I went to Tibet and I had yak butter tea on the side of Mount Kailash, which is the holiest mountain in the world, middle of nowhere. It was this weird mental clarity that came from yak butter tea that was the impetus for creating the field of biohacking, certainly for creating Bulletproof Coffee. And I have my travel journals from back then. And I was trying to come up with the words for what I was trying to do, where I was getting data. I was looking at what would work. And I actually wrote down this word, cyber shamanism. But I'm like, "People can't hack that. That's not going to be acceptable." And what hackers do... I worked in computer security. That was a big part of my career. Building cloud computing and things like that.

Dave Asprey:

So what hackers do when they're the good ones is they figure out how to solve a problem no matter what and they'd never let something stop them and they control systems so the systems don't control them. We use Linux right now as the operating system for much of the internet. A lot of our conversation right now is based on that kind of technology. It was created by a guy who was a hacker who said, "I don't like it that Microsoft hides what their software does from me. How about I write software that everyone can see." And I believe that when it comes to plant medicines, specifically, if you don't acknowledge that plant medicine and touch and the electromagnetism and electrical currents and flashing lights, that these are able to change our consciousness. If you don't acknowledge that and learn

how to use them, someone else will learn how to use them against you and then you're blind. And that's why I put hacking in the word. And that's why I think biohacking works.

Dave Asprey:

And that's why I think the psychedelic medicine is a biohack. Because when you're at the point in your control of your own biology, that you're saying, "I don't like it, that my emotional system responds this way to the world around me. And I feel disconnected. What can I do?" Well, perhaps you should do some trauma healing work because the evidence backs that, and this is a very profound and effective way to do it. It's not the only way, it's just a very good way. And so a biohacker who's well-read understands there are different domains of biohacking, and this is an important domain. I would also tell someone, look, maybe you should put down the potato chips and the alcohol for a little while first, and maybe you should get your biology working to see what your brain actually does when it's not all crapped up with stuff and then start doing your plant medicine because personal development is easier when your mitochondria work well. To the point that at Burning Man, there's two things that I gift the playa.

Dave Asprey:

And one of them, I have an art car that makes Bulletproof Coffee because funny enough, it has stuff in it that makes ketones. It's unbranded at Burning Man, of course. But when people have enough electrons available for their neurons to fire fully, when they're on substances, they generally have a much cleaner, happier, nicer experience and they don't feel wrecked the next day. And the other one is a mitochondrial stimulant supplement that I make. And when people are halfway through an experience and they're like, "I'm out of energy, but the plant medicine has more for me," they can suck on a little candy lozenge thing and suddenly their brain can make energy better and then they can finish their experience. So is it biology and biochemistry or is it the plant medicine or is it a combination of the state of the body and what the medicine brings? And I feel like you need to line them both up. The Sherman in Peru said, "Eat this, don't eat that beforehand or it doesn't work very well." And it feels like it's all in alignment.

David Rabin:

That's very well said. And of course, optimizing as Claude Bernard famously described, this milieu intérieur or this set and setting of the body and the mind prior to these experiences is really critical to the outcome of the experience. We have a lot of sayings in our society that reflect that, like what you put in is once you get out, right? So one of the questions I really wanted to ask you is you described biohacking in such an interesting way, really talking about restoring agency to us, right? Restoring our sense of control over ourselves. Which when we actually get down to the psychiatric origins of anxiety, anxiety actually comes from spending much of our precious attention on trying to control things in our lives that we actually don't have control over rather than spending time in our lives that we have.

David Rabin:

We only have so much attention everyday focusing on things that we do have control over like our breath and the practice of gratitude and what we put into our bodies and things of that nature. And so I would love to hear from you, in your words, with a specific respect to the way that you described biohacking as this restoration of control, how do you see psychedelic experiences playing into that and how can people use these plant medicines or these psychoactive compounds to effectively help to restore control from your experience?

Dave Asprey:

I love this question and the answer is a little bit longer than I'd like, but bear with me for a minute here. I wrote a book called Head Strong which took several years and it's about the biology of mitochondria in the brain and how you can turn those guys on, set up the environment right so that those ancient bacteria work well and how it changes your cognitive state in a major way. And after I finished the book, I applied that with some of the things that I knew about artificial intelligence and distributed systems from my work on the internet. And there's an algorithm for life that emerged from this work. And I've never seen this written about. It kind of is an explanation for Maslow's hierarchy of needs. But I'm going to explain that algorithm to you and then we're going to take it back specifically to where psychedelics hack it.

Dave Asprey:

So I was looking for somebody that would explain every physical, biological phenomenon and the spiritual, emotional trauma things, kind of the algorithm of life. So there's only four things that everything alive does. I don't care if you're a biofilm, I don't care if you're a cactus, a zebra or a human, it always works. The first thing you do to make a species thrive is you run away from, kill or hide from scary things. And you do that because predators will eat you. And the mechanisms for this, for humans are we fight, flight or freeze. And if you're a plant, you cover yourself in a hard shell or spines or poisons because you can't run, you have roots, right? So there's all these... immediate defense is what we do first and foremost. And that gets about a 10 X weighting in your decision roadmap.

Dave Asprey:

And so that's fear we're dealing with. The second thing we do, which gets about a five X weighting is you eat everything because famine kills most species quite often. So nutrient availability from a bacteria, a mold, all the way up to the highest forms of life is seek food always. And if you've done those two things right, what else do you have to do to make a species stay alive? Well, it's also an F word. So we had fear, we have food and the F word that you're thinking of is not it, it's actually fertility, although the other one works too. So all life forms, including humans, will seek those things in that order with those weightings. And the fourth F-word is the most important one that all life also does. And it's called friend. And it does that at about maybe a one X weighting for... in other words, that's just a normal weighting. It's not over-weighted.

Dave Asprey:

So what this means is that everything everyone's ever done that they're ashamed of came from one of the first three algorithms of life, which is I was afraid, I was hungry or I wanted to get some. Everything I've ever been embarrassed by has been from one of those situations. Now, that means if we can turn down our bad programming around any of those three things, it's going to free up a huge amount of work. And I said, "All right. How do I reprogram those three things?" Well, the lowest hanging fruit is actually food. And that's what I did with Bulletproof. The stuff that I make turns off hunger. And now we know the mechanisms of action. I could feel it work when I started the company. Now we know that research. People spend between 15 and 30% of their active thoughts. And I found a study on this. I can't cite where it's from, from memory right now.

Dave Asprey:

But 15 to 30% of the active thoughts are about what's for lunch or dinner or their next meal. So if you can turn off that voice in your head, all the electrons that went to that, get to go to something else. And

if you can gain control of your sexual urges, then you can redirect those electrons to something else. And Napoleon Hill and many others have written about that. But the one that's hardest to turn off and the one that's most heavily weighted is fear. And because that one has the ability to jump in and short circuit your behavior, your decision-making. It can actually blind you to opportunity and to things that are actually happening because your body is so wired before you can think to keep you alive, that's where psychedelic medicine comes in.

Dave Asprey:

It's how do we turn down inappropriate fear that doesn't serve us? I want the systems that pull me away from being burned, that will make me jump when a tigers springs out, but I don't want those systems to be turned on in a boardroom when someone says, Dave, you just screwed up as CEO or whatever else is happening. And I don't want them turned on when I'm in a public situation and some part of me that I didn't even decide on is worried about what people will think instead of me being a high integrity, authentic person. So what psychedelics do, they are the thing that turns off the biggest and hardest F-word. It's also the scariest one, because that's what fear is. Fear is what drives this scariness. And so when people sit there and say, "All right, what are the things I'm doing that I don't like?"

Dave Asprey:

Well, there's a, I'm weak because I don't make enough energy. We can hack that. I'm hungry all the time and I just keep eating the whole pan of brownies. We can hack that. But I want to go give a talk. And in the US, the thing that people are most afraid of is actually public speaking. So I'm picking that one on purpose. So I want to do that but when I decide I want to do it, I get cold. I start shaking. My voice turns off. That's just your body practicing fight, flight, freeze. But you don't like that. You want control of your body. Your body, your brain, your mind, your heart, something in you is betraying you because you decided to do this and you were inhibited by an automated system. Let's hack the automated system. Maybe a dose of ketamine would let you do that. Maybe neurofeedback-

Dave Asprey:

A dose of ketamine would let you do that. Maybe neurofeedback will let you do that. Maybe deep breathing exercise make you do that. But you have to know that it's fear and that it's not you. It's not a weakness. It's just an automated system that is misbehaving in a futile attempt to keep you alive. Even though you know it's not a dust situation, your automated distributed decision-making protection systems don't know that.

Dave Asprey:

How do you get a signal into them? Well, it turns out if you put the body in a reset mode, you can do that with psychedelics. And all of a sudden you see the truthfulness, but seeing it doesn't matter. You feel the truthfulness and the system that is there to keep you alive goes, "Oh, I didn't realize my pattern matching algorithm was wrong. Let me reset that". And that's why psychedelics are biohack. Told you those long answer, but it makes sense.

Molly Maloof:

That was so brilliant. Oh my God. First of all, actually the three of us on stage all have a mutual obsession with mitochondria. Once you've figured out that they're basically the seed of all decision making in the body-

Dave Asprey:

Yes. Yes.

Molly Maloof:

... and it's not your brain-

Dave Asprey:

No, it's a distributed decision-making algorithm. Stephen Wolfram did the math. This true, but very few people are talking about it. Actually, if you want to get really deep, Molly, we've talked about Schrodinger's cat and all those sorts of things ad nauseum. There's an observer effect. What kind of ego makes you think that you are the observer?

Molly Maloof:

I know. I mean-

Dave Asprey:

They observe things way before you do. The smallest unit of observer out there is these sub-cellular organelles. Your mitochondrias see the environment, they acknowledge it. If there is something that's collapsing, a wave form probability into reality, it is mitochondria and they form a distributed system with quadrillions of nodes, sensing things millions of times a second. And eventually all of that rolls up into your brain. And then you have seven layers of your prefrontal cortex that keeps throwing things out, so you can't see them. It's all just filters. And what comes to you is a tiny, tiny, tiny bit of what's going on in the world around you. But they got to do the filtering. And if their filters set up wrong, no wonder you act like a douche bag. You can't help it.

Molly Maloof:

And maybe you're not even functioning with that frontal lobe, but you're so inferior that you're just functioning with your amygdala or your limbic system, because you're an emotional state and you can't really fully access the highest function of your mind, because a lot of people suffer from unresolved trauma from their lives that just is sitting underneath all of their reality, actually draining a lot of their energy and causing them to have to do a lot more processing than they really should have to be doing to function.

Molly Maloof:

And so that's one of the biggest things I think psychedelics are bringing the world is just being able to clear out some of that fear based conditioning so that you can actually remember that you're going to be okay, that everything's going to be okay, and that life isn't as awful as it may seem.

Molly Maloof:

I'm so glad we're recording this because I'm going to have re-listen to your explanation of mitochondria a few times, because I really think that you are one of the few people who truly is able to articulate what is such cutting edge science. And I think we're only beginning to really understand the interactions of psychedelics and mitochondria. Right now there's so much focus on brain regions and glutamate transport and serotonergic systems and less about what's the fundamental experience change shift,

phase shift that's happening when you go from living with PTSD or living with trauma from your childhood to feeling that you're free from it?

David Rabin:

Throwing this in there as well, because you sum this up so nicely, the whole idea of the filter itself, right? There's these filtration systems that our whole sensory experience, whether we're aware of it or not, gets filtered through along the way before it gets to what we call consciousness or awareness, right. And that it's actually possible.

David Rabin:

And I think one of the things that just going back to psychedelic experiences and why they're... however you access them naturally through breath or on your own, or through singing or chanting or technology or through psychedelic drugs or medicines, that they offer an opportunity to sort of blur the filter, right.

David Rabin:

There's an opportunity to now become aware of what was buried beneath awareness prior within what Freud called the subconscious space and what Jung called the subconscious space, which then all of a sudden, when the barrier becomes blurred, that billions of data points of material that we just kind of buried under there, because it wasn't immediately relevant to our survival in the moment of our day to day, all of a sudden it becomes accessible to us and we can then use that information to pull it forth into our day-to-day lives, into our regular conscious waking awareness lives and start to act on it, which then leads to this integration process that Tim Ferriss described really well as the hardening of the clay. After you heat the clay with the psychedelic experience, you then have the opportunity afterwards to allow that clay harden into a shape and the mold that you actually believe and know to be consistent with yourself. This is such an interesting understanding.

David Rabin:

And on top of that, the fact that we know going back to mitochondria, and I think this is where psychedelics and mitochondria are going to interplay, is that we know that mitochondria fundamentally run on calcium signaling.

Dave Asprey:

They do.

David Rabin:

And a lot of psychedelic medicines impact calcium channels signaling. We know that chronic stress and stress in general, directly impairs calcium channels signaling. There's all of these different connections there that I think are just so fascinating that neuroscience is really starting to actually demonstrate how these things work.

Dave Asprey:

It's very well put there that hardening the clay, and I really appreciate Tim's work. And I've had a chance to interview him and sit down with him a couple times. And I think last time I interviewed him, he talked about microdosing things like ibogaine and things that I've really never thought about microdosing. And it sounds like there's a group of people, a lot of very close friends lately have gotten into a microdosing

side of things, where you just want a little bit of your consciousness in a higher awareness, you could say. And certainly as a form of nootropic, this works for some compounds versus others.

Dave Asprey:

I also have another group of friends where it's been a little bit more like, "Oh, I've done 250 Ayahuasca sessions." And I don't really have the heart to say, "Have you ever thought that it's not working?" Because it's possible to rely on plant medicines for escapism and not to soften the clay and to reharden it, but to sort of just soften the clay. And I'm a little worried about that.

Dave Asprey:

For some people where, look, you can use these things to open the door and to gain awareness, but you still have to do the work. And I think it lies on the shoulders of a very experienced shaman, a doctor or a therapist who's working with you with compounds or with EMDR or something else to sit down and say, "All right, what did you see? What did you experience? What are you going to take away from that? And what are the tools to harden the clay?" And that side of psychedelic medicine is important, because you can go all the way down to calcium signaling. And what I think hardening the clay is, is actually retraining mitochondrial sense and awareness networks to actually sense the things you want them to sense instead of randomly looking around for whatever they thought was dangerous, because they learned it when you were two. And that's trauma healing at its core.

David Rabin:

Yeah. And then that's reflected in the neural networks as well, right, all the as above, so below, which I love. I think that was Pythagoras from thousands of years ago, this idea that what's happening on the mitochondria level is reflected on the neural connectivity level and the way that our neural networks communicate around stressful stimuli, which we perceive to be threatening, but might actually not be threatening and might not warrant that sympathetic fight or flight freeze response, for example, public speaking, is a way to understand that the systems function very similarly in their mechanism, whether you're looking at the neural networks in mycelium underneath the ground, or you're looking at the neural networks in the brain, they are as above, so below. Everything is recapitulated on all of the different levels. And looking at, as you were saying, the importance of that integration period, that time to allow the clay to harden that actually takes a new shape or a new form, it could not be more critical.

David Rabin:

And Dr. Molly and I, we always emphasize this very, very much with our clients, because a lot of people just don't understand that we're taught in our society that you take a pill and you just take this pill every day and that does the work for you, right. And we know that, that could not be further from the truth, that the whole point of the work is that the medicine is a teacher that works as a tool with us, the clinicians or the shamans or whoever it is that's facilitating to teach our clients how to self-heal, not to make you dependent on a substance or dependent on us for treatment, but literally to teach you in whatever way we can to help you learn or remember how to heal yourself, which is, I think, really when we get down to it, the core of what delineates a line of addictive escapism implant medicine use versus actual therapeutic healing plant medicine use where there actually is an intention to use a medicine and then ideally not to have to use it again.

Molly Maloof:

Yeah. I want to expound on that a little bit. Part of the reason why you should see psychedelics as a tool is because it's... The whole purpose of it is obviously to help you heal, but also to help you change. And by change, I mean, literally how do you change your behavior? How do you change the way you think? How do you change the way you interact with people? And how do you change the way you respond to your environment and the world?

Molly Maloof:

What's so interesting, one of the things that I've been really digging into and I was kind of shy about admitting it, and that was that a lot of the things that I'm particularly interested in are semi-esoteric, but I think actually have scientific underpinnings and we're just beginning to figure out what they mean and what they are. And bear with me, because I think the connection is the mitochondria.

Molly Maloof:

Psychedelics, meditation, dreamwork, hypnosis, all of these are subconscious reprogramming tools, neurofeedback, 40 years of Zen or whatever that's called. I kind of feel like what's really happening on all of these levels is there is a process that your brain and your body is doing in order to help you adapt to the world around you. And literally your body's just trying to keep you alive. It's trying to keep you alive and well. And like you said, it's all about survival and reproduction. And survival first, defend yourself, then feed yourself, then go fuck something.

David Rabin:

Exactly.

Molly Maloof:

Basically I kind of figured out that pretty much all of the whole health span prerogative of the body is situated in the mitochondria, because they are the ones that are responsible for assimilating the substrates from your food, turning them into fuel and creating this energetic charge of yourselves that enables you to do work.

Molly Maloof:

But the interesting thing about mitochondria is that they're also responsible for signal transduction of stress hormones, and stress hormone production, right. And sex hormones. Okay, sex-

David Rabin:

Correct.

Molly Maloof:

... hormone production, right? All this is happening in the mitochondria of our adrenals and our ovaries and our testes. And so we really have to start thinking about the body as this massive machine of machines. I mean, it's literally just all these cells that are trying to do their best to communicate with each other in order to keep you alive. And so a lot of what we do with trauma is we bury it, because we're like, this is something that I don't want to deal. It's so scary that if I sat around all day and I thought about my trauma, I would probably not be able to function. Right.

Molly Maloof:

What we're doing with psychedelics and trauma healing is saying, "What if we were to give you a medicine that would enable you to look at that experience and that trauma from a place that isn't so scary, that doesn't cause you to go into fight, flight, freeze, but actually maybe you feel kind of good in the experience, and you start to realize that that experience, it was awful, but you can move through it and you can move past it?"

Molly Maloof:

And I don't totally understand how to explain this scientifically yet, because there's so many different theories on how psychedelics work. There literally are so many papers that I'm reading through right now. There's so many different models. But I do feel like there's something to be said about these primitive functions of our body and how psychedelics somehow allow us to reprogram our subconscious so that we're seeing things differently.

Dave Asprey:

If you look at the goal of all of the ancient meditation traditions and things like that, well, it's basically immortality and enlightenment and those kind of come together. I've looked a lot at the esoteric side of it. Okay. What is enlightenment? And where I ended up given what I believe about the distributed nature of consciousness in all of the cells and subcellular things in the body, is that when you are at that stage, you have the ability to be aware of any network or any component in your body by choice. And right now we generally don't.

Dave Asprey:

And it's funny because for five years I taught engineers in Silicon Valley, how do we move from centralized computing to decentralized internet in plus one architecture stuff? I mean, I would dream about this. I ran strategy for the first data center company and really lived this at a level where I was just immersed in it.

Dave Asprey:

And what you'd soon find is that it's impossible to make a life-size map of the country, because it has so much detail that you couldn't use it. The way we start monitoring and managing systems of millions of computers is the same way we monitor and manage systems inside the body without our conscious awareness. Instead of saying, "Hey, let's pay attention to everything," which doesn't make sense, you set up a whole bunch of distributed filters that says, "Only if something doesn't match what I expect, should you bring it to my attention." You don't have to look at all of these routers and servers, only if something deviates from the norm.

Dave Asprey:

And so what we're actually fed from our mitochondria is they're all making their little local predictions about the future a microsecond ahead of time, and if something doesn't match, you notice. You don't notice how much your car keys weigh when you pick them up. But if they weigh two grams too much, you'd be like, "They're weirdly heavy," because that network of muscle sensors and nerves and all that stuff, it just did something automatically. When we have full control of our mitochondrial networks, our monitoring and management system that we control as conscious beings is so dialed in that we can say, "I'm going to be fully aware of whatever I choose to be fully aware of." And right now, because of fear, because of hunger, because of feelings of loneliness, we oftentimes don't have the ability to do that.

Dave Asprey:

And that's why psychedelics are so important, I think, as reprogramming that network so that it becomes something you can dial into, you can control and you can get a report. Whereas today, you can't order a report on what's going on in the world around you. And that's why plant medicines are so important.

Molly Maloof:

So well said.

David Rabin:

Yeah. I love that. Thank you so much, Dave. That was really, really great. And I want to make sure that we're respectful of your time and if you're open to it, that we leave some couple of minutes for questions. Does that sound good to you?

Dave Asprey:

Sure. I can go for about another 10 minutes max.

David Rabin:

Let's do questions then.

Mona Hamdam:

Hey there, my name's Mona Hamdam, a teaching fellow and research candidate in applied ethics at Harvard University. Dave-

David Rabin:

And you're a total stud, Mona.

Dave Asprey:

Love you.

Mona Hamdam:

How's it going, Dave? Hi guys. Hi Molly. [crosstalk 00:48:03].

Molly Maloof:

Thank you for joining us up here.

Mona:

How's it going, Dave? Hi guys. Hi Molly. How are you guys doing [crosstalk 00:48:02].

Molly Maloof:

Thank you for joining us up here. So-

Mona:

No, thank you. Of course, of course. I'm a big fan of, watch with interest, everything that all of you are doing. And Dave, of course. What's exciting you Dave? What's at the forefront of longevity, compression of morbidity in human thriving?

Dave Asprey:

I believe that if we can turn down our degree of wasted electrons in the body, that the body will automatically allocate them towards something and it'll go towards ATP generation, it'll go towards proper protein folding, it'll go towards waste management. But that if we instead take those precious electrons that come from our mitochondria and instead allocate them towards useless defenses towards things that aren't actually dangerous and towards these other big, burst three F words, that it removes our ability to maintain the hardware properly.

Dave Asprey:

And that one of the big anti-aging things you get from plant medicines or from any meditation practice is a reduction in wasted efforts and wasted effort will go back into systems maintenance. It will go back into personal development. And so for me, it's like stop doing the things that make you weak. And one of the biggest things that makes you weak is worrying. So if you want to live a long time, learn how to worry less. And that doesn't mean learn how to accept your worry, notice your worry, and then let it go, because you still wasted electrons. It's how do you turn off the system that made the worry in the first place, so you didn't have to waste energy on it.

Dave Asprey:

So it's this fundamental sub-cellular laziness that I think is driving a lot of what we're doing and that's gotten me really excited because we can now look at the neuroscience side of it, look at the outcome of it, and we can look at the inputs and we don't have to know the mushy middle that David and Molly are talking about here. And that's why that hacker mindset is useful is because if it really is a black box inside the body, it's okay. We just looked at the outcome and the output and did we control the system enough to reduce the wasted effort? If we did, it was an achievement. And then we can go through and keep cracking open the black box, which is a multi-generational effort. In the meantime, let's get the results now.

Molly Maloof:

No, you and I carry the exact same beliefs around health span. And like, this is literally what I teach my students at Stanford. It's all about how do you increase energy output? And what does energy electrons, electron flow? And like arguably consciousness is this idea of electron flow, right? Like if cells no longer have electron flow, then they are no longer functioning period, right?

Dave Asprey:

That is, that is true. There's also information field theory, which probably drives a lot of consciousness. And guess what the antenna is for information fields, it would be either mitochondria or possibly DNA. And since mitochondria have their own DNA and there's a cellular DNA involved as well. I think some of what we're actually doing, if want to get really esoteric about it, is we're dealing with that energetic stuff you talked about Molly, but we're also dealing with the information fields that are generated by and read by our mitochondria. And [crosstalk 00:51:10].

Molly Maloof:

Yeah, if anyone out there goes and looks up mitochondria resonance, and you can actually see how they communicate with each other through these waves [crosstalk 00:03:17].

Dave Asprey:

You want to have your mind blown Molly. I interviewed the guy behind hash graph, the algorithms, a Carnegie Mellon computer scientist. The way you establish trust in a system for voting in distributed ledgers is likely identical to the way mitochondria do something called quorum sensing. [crosstalk 00:51:38]

Molly Maloof:

And bacteria

Dave Asprey:

And bacteria, of course. So if half the cells in your hand are feeling danger and the other half are feeling pleasure, how do they decide who's right. And it turns out there's an algorithmic approach to that. And it's really cool that in our distributed crypto stuff, we're figuring out the same way that biological systems work. And it's so fascinating and so cool and so micro. But I think that we're going to learn a lot from the information field side of it.

David Rabin:

Yeah. Without a doubt. I think one, going back to what we're talking about earlier, one of the key ways that these cells exchange this kind of information is through calcium channel signaling, [crosstalk 00:52:14] which is interesting, on the minute tiny little bits of calcium here and there level, which is very, very important, which is why it's critical that we tackle our stress and the way we cope with stress in a very direct way, because stress dysregulates calcium channels signaling, which leads to chronic stress and the effects of chronic stress and illness on the body. And just going back to Mona, I think there's another thing that's really interesting on the forefront of this is technologically facilitated altered states that promote the opportunities for change, the opportunities for thriving and transformation without requiring you to dose with a medicine.

David Rabin:

So one of them is Apollo, which I developed at the University of Pittsburgh, which is currently available. Dave works with another technology, I believe. And you've used both of the Apollo and [inaudible 00:05:04], which is another interesting technology that induces some degree of altered states of consciousness with electrical fields. And there are a few others out there now that also do this, but I think paying attention to these technologies that are facilitating altered states of consciousness without medicine or without the ingestion of a drug is a really fascinating direction that the field is going.

Dave Asprey:

In fact, if you look, your Apollo system is really cool and vibration and touch, those are the primordial sensors, probably after smell that humans have. So they're very visceral and you can tap into things there. And because I'm kind of a neuroscience nerd because of the 40 years of Zen Institute and all of that, the idea that we can run small pulse electromagnetic fields over the brain and have profound and measurable on an EEG, changes. Those are compatible technologies. So like last night at bedtime, I use both at the same time because they're not going to conflict and you can also use flashing lights and drumming or Tibetan bowls.

Dave Asprey:

These are all things that are compatible. And if you're saying, look, I'm going to turn all of these on to sleep. I got two and a half hours of REM and two hours of deep sleep last night in seven hours. I'm feeling pretty good about it, but it was technologically enhanced because of Apollo and because of [inaudible 00:54:21]. And that's kind of cool. Oh, and I also use some mushroom extracts and some other supplements and all, I feel like I got a really good deal out of that.

David Rabin:

For sure. And thank you for, for describing the experience, really bringing the technology and plant medicine back together. All right, so, bring... So, Hey Bob.

Bob:

Hey David. Hey Molly. Thanks. Yes, Dave, I had a question of, do you think there's a trade-off between longevity and human performance at times? For example, if you are putting on a lot of muscle weight training, hard, you're causing a lot of inflammation, right? You become over-training, but it may be good for performance sometimes. Same with nutrition, right? Eating carbs for kind of marathons and things. And you may need that for performance, but we know for longevity, time-restricted feeding and fasting really helps. And with that, with inflammation being linked to so many chronic diseases, what are the best ways apart from kind of some of the obvious to, that you do to reduce inflammation? Thanks.

Dave Asprey:

That is a really cool question about longevity versus performance. And the question is what does performance look like? And I wanted bodybuilders and endurance athletes like marathoners to be a part of the biohacking world, even though their goals are pretty different. And I was kind of grateful that the New York Times a while ago, they wrote something about me and they said that I was quote, almost muscular. And I'm like, yes, that's the look that is correlated with longevity the most. And so if for you, performance means picking up the heaviest thing in the world or running 26 miles in the least amount of time, both of those are going to take some time away from the ultimate longevity, but it may be worth it because it's what you love. And it's eliminating the fear of death. That is the biggest reduction in stress that you could ever have.

Dave Asprey:

And to say, look, everyone's going to die. Some of my longevity friends get pissed when I say that, but you're going to die because the universe will come to an end. Even if you think you're immortal, there will be an end, accepting it, not running from it is a powerful way to do it. So if you want to manage inflammation, then you look at hormetic stress. And what we can do is we can measure your heart rate variability, which funny enough will be incredibly impacted by the strength and health of your mitochondria. How good are they right now at turning air in food into electrons? So if your heart rate variability is moderate to high, then you can push hard on your training. And if it's wrecked, you actually need to recover more.

Dave Asprey:

So my experience is that almost all athletic focused people have to look at recovery more to the point that I started upgrade labs, which is a recovery facility to let people, whether they're athletes or not, recover faster than mother nature wants, instead of helping people put muscle on faster than mother nature wants, which is also possible, but it comes at a price. So it's balancing physical stress, emotional

stress, and what I'm going to call spiritual stress so that you don't exceed your stress capacity for your hardware and software at any one time. And if you do that, it will be reflected in inflammation, it'll be reflected in heart rate variability, and it will be reflected in happiness, which is the ultimate way to make people nice to each other.

David Rabin:

Very, very well said.

Bob:

Thanks for that. Thank you.

David Rabin:

Yeah, I would have said the same thing, Dave, the balance is critical. I think in our society, we often too often talk about peak performance only, right. But what about peak recovery? Ultimately if we want to continue peak performing all the time, then ideally increasing the consistency and that ultimate peak of what peak performance could be, then we have to prioritize peak recovery just as much. And that is now really interesting to think about because you can measure it, as you said, by looking at things like heart rate variability. So if you look at heart rate variability and you track it over time and trend it, then you can get a really good sense of, hey, is my body actually recovered enough? Despite whether I'm tuned in enough to sense it or not, is my body actually recovered enough to take on this big physical stress, workout stress, spiritual, emotional, whatever it is today. And it helps us to just reacquaint ourselves with where we're actually at right now and what we're actually ready for. So that was a really great way of describing that. Thank you. I know you have to run.

Dave Asprey:

I do.

David Rabin:

I just wanted to thank you again for joining us. We really, really appreciate your time and we are so grateful and we'll leave it to you if there's any last words you want to share with the audience before you go or anything you want them to check out that you are putting out there.

Dave Asprey:

Well, thanks, David, and thanks Molly for just a fascinating conversation. I really like how you're doing this on this app and all of that, because I think this just facilitates a really cool conversation. I would love to get a recording of this and put it up on Bulletproof radio. I think the audience would love that. And if you're enjoying what I'm talking about here, I would say, definitely look at 40 years of Zen, it's a five day intense neurofeedback program I designed for senior executives and some of the highest performing people on the planet and for myself. And that's just, it's worth your attention if you're really pushing it and you're saying, how do I get to that next little level? This is the highest and best that I know. We don't use plant medicines there, but we replicate the states as much as I can.

Dave Asprey:

And I would ask you if you're looking at doing psychedelics, whatever form they're in, find a highly qualified professional, I am scared of the people say, I did something twice. I ordered some on the dark

web. Now I'm a shaman. I believe there is spiritual danger from that perspective. I cannot tell you why or what the spiritual danger is. But every one of the masters I know, the 70 and 80 year olds who've done it way more than me says the same thing. And I've learned to trust their judgment. [crosstalk 01:00:17] So if you're going to do it, do it right, that would be my biggest thing for you. And of course, check out my books and all that kind of stuff. You want to live a long time or have your brain work [crosstalk 01:00:25] New York Times bestsellers. But big thing is protect yourself energetically when you do your plant medicines. Do them with professionals, make sure you get clean stuff and just don't mess around. This is your consciousness. And if you change that, you won't know you changed it. And it's very hard to get.

David Rabin:

Thank you so much for that

Molly Maloof:

Thank you so much Dave. Guys, I got to run. I'm going to go jump in the ocean-

David Rabin:

Thanks. Bye.

Molly Maloof:

But I love [inaudible 01:00:48] and have a wonderful, wonderful day everyone. Have a great weekend everybody. Stay safe out there.

David Rabin:

Thank you so much for joining us again on the psychedelic news hour. I'll let Dr. Molly and Dave sign off and we really having all of you here again with us today. And we look forward to another psychedelic news hour next week, featuring one and only Jackee Stang, who actually was one of the first people at Bulletproof with Mr. Dave Asprey and ultimately started a wonderful organization called [inaudible 01:01:20] that is working to sponsor and help people share knowledge about psychedelic medicines, how to use them safely, and also spearheading the recreationalization movement of psychedelic medicine and really helping to share knowledge about safe use. So please tune in next week and join us. And we look forward to seeing you soon. Thank you again and have a wonderful and restful weekend.