POD OF JAKE
#59 – NATHAN CHENG
AI-GENERATED TRANSCRIPT

Jake 00:59
Thank you so much, Nathan for coming. And joining me on the show today. I really appreciate you taking the time, I've come to know you as sort of like the longevity guy. On Twitter, you've got this, this wonderful site longevity market cap that comes with a newsletter, longevity list, which is sort of like a job board. You're doing a show on clubhouse, I believe you've got like three or four different sites all targeted around longevity. And you've sort of like made it your mission to bring attention to this cause that obviously is very important to me as well. And I've tried to sort of bring some attention to through the podcast. So I think for those who don't know you the best place to get started would be just to sort of walk people through your story a little bit, sort of as early as you're willing to start to where you are today.

Nathan Cheng 01:44
Yeah, sure. First of all, thanks for having me on the podcast. I love what you're doing. And yeah, I think it's it's great to just bring more awareness about longevity to the broader, you know, public. So for my story, I guess, where it sort of begins is, back when I was doing a PhD, I was at University of Toronto, doing a PhD in physics. And I got two years in and I just had this sort of existential meltdown, where I just came became sort of disillusioned with life and just wrestling with, you know, the inevitability of death, the you know, ephemeral, the transient nature of life. And just like this concept of, I don't know, I guess you could just say, just, just frustrated or bitter, maybe a bit of existential angst by colored stuff, just

Jake 02:44
one of those quarterlife breakdown types of things.

Nathan Cheng 02:47
Yeah, exactly. Yeah. And just wrestling with mainly this existential angst and I got really just bummed out with, with life, and became sort of like a major weight on me and psychologically as well. And at that time, I just, I just couldn't take it. So I ended up dropping out of my, my PhD. And I ended up actually backpacking around the world, mostly in like Asia, Southeast Asia, spent some time in Australia as

well. Then I ended up actually in China work there part time, for about two years. I also did some internet marketing on the side. I also discovered Bitcoin around 2015. And that sort of opened up my eyes to investing. And eventually, I came back to Canada. That's where I'm based in Toronto. And I realized, okay, well, I've, I've gone through this full circle, and I haven't actually answered any of these questions. These, you know, existential questions. What's the point of life? You know? And yeah, I, I was already aware of Aubrey de Grey, and, you know, some of the longevity stuff from years back. But I didn't actually really start digging deeper until maybe 2018, maybe 2017. And, yeah, I just started off reading a bit more about it, you know, watching a lot of YouTube videos. And at some point, I decided, yeah, okay, maybe this, this could be a thing, right. And I started just first thinking about, okay, what can I do? Right? And Laura demming actually had this, this talk that she gave on, that I saw on YouTube. And it was she was saying how, how there was a lot of money coming into this space compared to previous years, but there, there wasn't enough founders. Right. And that was interesting to me. So I was thinking, aha, maybe she's talking to You know, maybe she's calling me Maybe I should be a founder. Right. But the problem is, I, I don't know any biology, right? Like, I hadn't taken high school biology or anything like that. And so I figured, Okay, so the first thing I should do is, you know, learn some biology. So, you know, I took some courses online, a really good one is the MIT course, on a dx seven, double 0x. Secret to life. It's like an introductory biology course by taught by Eric Lander. And that one's really good. I, you know, I just started reading more papers. And then I was looking into the space, right, like, what, what's being tried in terms of like longevity, biotech companies. And so I looked into it, and I figured, hey, you know, maybe I should, you know, write about what I'm learning about, because, you know, oftentimes, the best way to learn about a new subject is to just write about it. So in about July 2020, I started the longevity market cap newsletter. And I was just, you know, looking into different companies and the science behind them writing about longevity, investing, whatever news was happening at the time. And it started off very slowly at first, but then it I noticed it was growing, and actually exponentially. So even to this day, it it's, the subscriber count is doubling every seven weeks, like clockwork. And, of course, Balaji, Sreenivasan has had a lot to do with that, because,

you know, sometimes he, you know, tweets about it, you know, plugging my newsletter, which I'm super grateful for. But, yeah, so that sort of took off. And one of the things that I noticed was, people were very interested in this, right, and it was becoming sort of like a community. And so, I came to the realization that, okay, maybe me learning about all this science, and you know, trying to start my own longevity biotech company is not the correct play at the moment, right? Because I can spend all my time, you know, four or five years researching stuff, and then finally, maybe start a longevity biotech company. But that's just one company. What if I could convince 100 people to start longevity biotech companies, and this is sort of like the leverage play, right? And I figured, okay, maybe this is the way to do it. Because, you know, not a lot of people know that. longevity industry is a thing, right? Not many people know, that there are like 40, some odd clinical trials, in longevity, like trying different longevity therapeutics. And I just took it upon myself to, to make this my mission, right to just grow the amount of people in the longevity industry, people who want to either work for a longevity startup, or people who want to, you know, found longevity, biotech companies, people who want to invest in the space, or just even people who want to, like, champion the cause through, you know, media or, or other means, right. So that was really how I got to this point. And then, yeah, I have other projects as well. So as you mentioned, I have longevity list, which is kind of like a jobs board, also like a longevity startup, company, database. And I also have the longevity biotech show, which is a weekly q&a, on the clubhouse app, where we just interview people who were building or funding, longevity, biotechnology. And that's going to be turned into a podcast pending, you know, permission to upload the recordings to, you know, Spotify, and in the rest. So yeah, that's kind of where I am now. Yeah.

Jake 09:00
That's great. I appreciate you sharing the story. And it's, it's a great one, I appreciate the transparency especially on sort of early on having this, you know, quarterlife crisis, as I think it can sort of be summed up with, and, you know, I had a, you know, maybe not quite the same thing, but a similar sort of moment when I was in banking a little over a year, year and a half ago. And it was more of a gradual thing. But I sort of realized, like, I don't want to climb

the rungs here, you know, forever and I want to do something that's a little bit more fulfilling and feels meaningful and like, I can sort of use my skills for sort of the betterment of the world and sort of improve myself along the way. And you know, that that's why I quit banking second sort of sympathize in a way I was sort of dropping out of a specific track and, and sort of taking a leap. Let's talk a little bit about your your backpacking experience, because I think that's really interesting. went out for about three months after I quit. Sounds like you went out for for maybe years. We'd love to sort of hear about, you know, your your travels to Southeast Asia and Australia, stint in China, whatever sort of was was interesting from that period of your life and sort of what you took away from it.

Nathan Cheng 10:18
Yeah, sure. I guess maybe I just want to comment on your, your banking crisis, personal banking crisis. Yeah, it's interesting. I think there's a lot of people very smart people who end up in banking, when they could also be doing like other things that are, are very cool, like, you know, pushing forward technology like, you know, like biotechnology, longevity biotechnology, and you know, how, who is it? I think is greyscale. Who has this campaign, you know, drop gold, right? Maybe the longevity biotechnology, you know, industry should have a motto drop banking, right? And get all the quants and all the people in thinking out of there and you know, doing more technically progressive stuff. But yeah, Anyways, back to your point about the question about backpacking. Yeah, so um, I started off in China, then went around, sort of like Southeast Asia for a while, you know, the typical sort of countries, Thailand, Vietnam, Cambodia, Indonesia, also went to Singapore. And then I yeah, I ended up in Australia, that was for a holiday working visa, actually. So is there for a couple of months, you know, in Sydney. And the funny thing there was, I was extremely poor, right? Because when you're a backpacker, like, you just don't have a lot of money in general. But I ended up in Australia, and I found it actually difficult to get like a normal job like, like a normal sort of holiday working visa job, which is kind of like, you know, either working at a bar or like a restaurant or something like that. So I had to end up like, leaning on my, my skills, which at the time was just like, physics and math. So I did a lot of tutoring at that time. And when, when a little story back then,

was I was just searching for for any sort of jobs for tutoring, right. And I was just looking through the classified ads. And there was this one student, like a second year, electrical engineering student who needed tutoring in like, some sort of circuits course. And I had taken some circuits courses back in, in undergrad. But, you know, second year, electrical engineering is maybe a little bit above my paygrade. But I was so desperate for money, I was just like, hey, why not? I'll just try it. And like, you know, he can send me the textbook. And as long as I can stay like one step ahead of you, then that at least that will be okay. Right, and actually worked out, you know, I learned some of the stuff I already knew. But then there was other parts that I had to learn ahead of time. So that was kind of a crazy experience. Just being in Australia as well as like a poor person. Was was, was interesting. And yeah, I was there for four months, but I ended up in China. And yeah, there I was also just like doing a lot of tutoring, mostly for like, super rich Chinese kids.

Jake 13:26
Yeah, that's, that's good. That sounds like you sort of found your hustle and just made it work, you know, teaching people, you know, tutoring people and subjects you didn't necessarily know, certainly sort of a risky game, but it sounds like it worked out. And I'm sure you learned some things along the way. When it comes to sort of like, you know, the reason for dropping out, you're sort of trying to figure out like, the meaning of life, I think, sometimes, you know, I tend to be somewhat of a, you know, big, big question thinker myself. But I think sometimes these questions are sort of, you know, just not useful. Not Not that it's, you know, you shouldn't examine certain things and be thoughtful in life. But some questions like, what is the meaning of life, I forget who it was, but someone sort of wrote something that stuck with me, which is basically like, don't spend time on questions that don't have answers. Right. And, you know, you might be able to figure out your purpose or like your mission, but to sort of say that there's like, one meaning of life, that's sort of the answer. It's like, you know, someone probably would have figured that out by now after 1000s of years of everyone sort of thinking about it. So did you ever, I guess, like, did you resolve that? or How did you sort of dig yourself out of this existential sort of crisis? And, and, you know, did it just sort of fade away naturally, as you sort of

traveled the world and had issues like, you know, figuring out how to how to make money to worry about or was it something that you sort of addressed directly, and were able to move on from?

Nathan Cheng 14:54
FYeah, so I guess from a fundamental perspective, You can think about, okay. If If you ask the question, what is the purpose of life? And if you have no idea what the answer is, then maybe the default mode or the default answer should be working on, you know, longevity, because at least then you're extending the runway or the extending the time that you have to figure out your purpose in life. So that's like, maybe one way you can frame the argument for working on longevity, right. But then the other thing was, I guess, for me personally, the existential crisis had a lot to do with like, just coming to terms with death, I guess. And aging, of course, because, for me, it just seemed pointless to do anything. When life is so transient, right, like for, for the most part, you know, from like, zero to 20 years of age, or like, in school, your life hasn't really begun until maybe after your 20s or whatever, but then, you know, the last, you know, 20 years of your life, or, or 10 years of your life, where are, you know, your body is beginning to decline, and maybe even your, your, your mind is beginning to decline. So there's really not that much time in between, and a lot of the time were spent is spent sleeping as well, right, you know, a third of your life. And it just seemed like, Okay, well, what's, what's the point of all of this? Like, you know, and just grappling with, I guess, yeah, the the question of your own mortality, right? And longevity biotechnology doesn't really solve this, this question, like, I will be the first to admit that, right? Like, even if we can extend our lives, you know, hundreds of years, maybe 1000 years, even if you wanted to go that far, you know, you can still die from being, you know, hit by a bus, and other, you know, accidents or those sorts of things. So, it doesn't really solve that problem. But, you know, it could be a stepping stone to other transhumanist technologies that would bring us to some sort of, you know, solution against, you know, death and, and those sort of things. And, of course, people will say, okay, but what about the heat death of the universe, I think, you know, the reports of the heat death of the universe are greatly exaggerated, like, we don't really know, all the physics that's going on, and cosmology, so that's something that

we can worry about in the future. But that being said, right, even if we don't, you know, hit these, you know, crazy moonshot goals of transhumanism and that kind of, you know, defeating death, I still think it's a worthy goal to work on longevity, right? Because aging is, is suffering, right? Like, not aging, chronologically, but biologically, aging is a type of suffering, right? There's, there's just so much pain that accompanies all these, you know, age related diseases. And I think, even if we don't hit the transhumanist goals of, you know, crazy life extension, and you know, indefinite life extension, I think it's still a great consolation prize to be working on longevity biotechnology, because we'll definitely be able to make a dent in a lot of these, you know, horrible age related diseases, like, you know, Alzheimer's disease, Parkinson's. So I think, just to as, like a fundamental, like, moral mission, it's, it's a great thing to work on. But then there's this like, sort of secret moonshot upside, you know, of convexity of the longevity escape velocity and transhumanism at the end. But, you know, I'm perfectly fine with just the consolation prize of, you know, extending human life, health span, and just reducing the suffering that comes with biological aging.

Jake 19:06
I mean, look, if, if you can even just by one or 2% help to extend the average human health span worldwide by bringing attention to the cause and inspiring, like you said earlier, sort of 100 or however many longevity founders, a couple of whom may succeed in a large way, then, like, it's pretty hard, you know, you can ask a bunch of questions and, and be supercritical, but it's pretty hard to say that that's a life not well spent. I think so I sort of understand your your reasoning there, I think, to two points that I want to mention, just sort of rounding out the issue from, from my perspective, one is that, you know, there's this there's a difference between sort of what is the purpose of life and like, what is my purpose in life? Right, and I think, up until a little over a year ago, I had sort of run circles on that, that sort of issue and, and sort of had a few ideas. But, um, but not really, you know, I was addressing the question that you've sort of talked about, like, what is the purpose of life, I hadn't actually spent too much time, sort of personalizing it and looking at, like, what's my purpose, and I actually took some time. You know, not a lot of time, it takes like about an hour or whatever, even less, to

sort of just sit down and say, Okay, this doesn't have to be like, the right answer, or the permanent answer or anything like that. But if I just sit down, and I try and like a sentence or two, to sort of define my purpose, that's probably like, a useful thing to do. Like, it's probably as useful as you know, watching the next tonight, or whatever it is, at the very least, it's probably not a waste of my time. So I sort of sat down and did it. And I came out with something that I thought was, was pretty good. And it's not perfect. And it'll certainly change over time. But it sort of helped me set like a goalpost, which I think a lot of people just sort of aimlessly go. And if you can just try to sort of define the goalpost and be aware that it's not perfect, and it can change over time, I think it helps a lot for people to just sort of, you know, set a direction, and I've sort of shared this with people over time who have sort of said that it works, you know, a little bit for them, at least. And then the second thing is on, you know, life may be having no value because it's transient or fleeting. I think, like, just a metaphor I thought of while you were right, you were saying that that was basically like, you know, why do I go and enjoy like a great dinner, right? I go, because, you know, the food, like, it tastes good, right? Even though I know that it's gonna end, of course. And so I think like, maybe the, the two simple and probably wrong answer for, for, like, what's the purpose of life? Or like, Why? You know, why live? For me, it sort of boils down to like, it tastes good, right? Using like, the metaphor, and I don't know if that's like a perfect answer, but just sort of my thoughts on on your sort of monologue there. And then, you know, connecting this to longevity, I think that's like a super, it might sound sort of normal to you. And it sounds somewhat normal to me, because I'm into it as well. But to the average person, sort of, you know, coming to the answer of that question that you were asking, and, and arriving at, like, I should work to promote longevity, super non obvious place to end up. But I sort of understand the logic. I'm curious, you know, those early days, you start, you start learning about Aubrey, you start, you know, listening to the Laura demings, saying, We need more founders. What was like the early days of getting started? Did you know right away, like, I'm gonna start writing, you mentioned that you started studying biology a little bit. Was there like, I'd love to hear about sort of your considerations Getting Started?

Nathan Cheng 22:58
Yeah, totally. I guess. When I first started, I had, I think I watched a YouTube video of Ray Kurzweil, it was like a documentary of him. And he was, you know, taking all these supplements to try and, you know, live forever, or at least close to forever. And I thought that was an interesting idea, you know, just like, longevity escape velocity, right. And, at some level, just like, intellectually, it made sense, right? To me. I figured, you know, if it's possible, right? If anything isn't, you know, forbidden by the laws of physics, then there's a good chance that it could happen, right? Like, I have this sort of idea or hypothesis called Murphy's Law of innovation, which is basically, given enough time, anything that can be invented will be invented, right? And if you believe in, you know, technological, progressive, progressive sort of ideas, then this is, you know, not too crazy, right? But the idea is, okay, so there's nothing in, you know, physics that fundamentally prevents, you know, human beings from living to 500 years, right? That's very plain and obvious to me, right? And, but the question is, okay, but when could we you know, develop these technologies, right, you know, if, if, if human civilization continues its trajectory, and, you know, advances in AI and other you know, biotechnologies take us further than this should happen at some point, right. But back then, when I was just studying in longevity, you know, learning about longevity, I was thinking, Okay, this is just something that's going to happen in the far future. It's not going to be me who does anything in in this field, because I don't know any biology, right, I'm just gonna work on something else and just, you know, observe from the outside. But I think what we need to avoid is, you know, being tempted by these sort of technological determinism sort of viewpoints, right? Because the future doesn't build itself, right. So I yeah, I started just learning more about it, because I was like, hey, maybe I can do something about it. And actually, actually, blotchy sort of Austin had a lot to do with my, my path down this road, even though he didn't know it at the time. So I had just been like tweeting just random links about longevity that I was finding. And then one day out of the blue, he just like follows me on Twitter. And I'm like, Whoa, why? Because I haven't actually done anything, right. I just know that longevity exists, right. And there's an industry, but I haven't actually done anything at all right. And it

was weird is because I was thinking about it. Like, why would you? Why would Balaji follow me? I don't, I didn't do anything, right. And so I got this, like, crazy imposter syndrome. And, but in a way, it helped because it was kind of like this spooky motivation at a distance, right? Where I was thinking, Okay, well, maybe I should do something about instead of just, you know, being this imposter, and maybe I can actually, you know, do something about longevity, right? So, yeah, the initial thing, the initial sort of idea was to start a biotech company. So I, I, you know, started learning biology. And yeah, I took that course that I was talking about the MIT course, online. But yeah, I think the Lord demming YouTube video was was what really, you know, made me think, Okay, well, there's a lot of money coming into the space, we need more founders. Okay, I can try and be a founder. And, yeah, when I just got to the point of writing the newsletter, that's when I realized, okay, let's, let's see what's in the, in the space. Right. So I was looking at different companies, just writing about investing, because back in, back in July last year, like the stock market was like, on everybody's lips, right, everybody was talking about investing. So actually, I was thinking, Okay, I'll write about this from an investing point of view. Because, you know, maybe that will be more interesting to, you know, the general public. And, you know, it's just a good way for me to learn about the different companies that are out there. And yeah, so I, I didn't know that I was going to start like a newsletter. It just just kind of happened organically. And actually, the thing that actually was the first thing that I made in longevity was a website called biohack. Stack, which I have. It was it's basically like, kind of documenting the different regimens and routines that different people use to, you know, extend their health or extend their performance. So I had that website up, but even that was kind of like, just to, to longevity light for me, right? I was more interested in doing more radical stuff, but I just thought that was a cool idea. But then, yeah, so the second thing that I actually did in longevity was creating longevity market cap.com, which is kind of like annoyed to coin market cap, right. So for for those who don't know, coin market cap is like one of these old websites in the cryptocurrency space, where it just lists all the different cryptocurrencies and crypto assets by market cap, so it just ranks them. Right. And I figured, okay, well, there's actually a handful of publicly traded longevity companies, but people don't even

know they exist, right? So one way to, you know, just get people more involved and learn about what's out there in the investing space of longevity is to create, you know, a similar list but for longevity, biotech stocks or, or stocks related to longevity biotechnology. So that's what started first, but then the newsletter followed very quickly, mainly because everybody was talking about substack at the time. And yeah, I didn't really have any experience writing newsletters or anything like that. But the one thing I did know from, you know, my experience in internet marketing, and especially SEO, is that an email list is super crucial, right? It's the only thing that you truly own and you In some ways, an email list is kind of like the self sovereign currency of media, right? Because YouTube and Facebook, Instagram, Twitter, they can shut down your account at any time, as we've seen in the past year, right. And so the only thing that you really own is an email list. And so I thought, Okay, this is cool. I can I can, you know, just write about longevity. And, yeah, it just started off very slowly. Like I, for the first couple months, like, you know, I was writing to an audience of, you know, 2030, maybe 40 people write, but it just slowly took off. And I, I was surprised, because I didn't think it was. I didn't think it was very good, actually. And if you read some of the earlier stuff, again, maybe don't read the earlier stuff. It's kind of rough, right. But it just, you know, it evolved organically as well. And now it's got all these different sections. You know, I put jobs listings, I also put, like an alert for different startups that are raising money in the longevity space, which is cool. But yeah, it's just like this, this thing that just happened very organically. I'll just pause here.

Jake 31:15
Yeah, no, I appreciate that. And I love what you're doing. You're basically from my perspective, building this sort of like infrastructure for longevity, where you've got the top companies by market cap, it's funny, I'm obviously very familiar with coin market cap calm, but didn't even put it together in my head that it's like a blatant, you know, version of that with longevity market cap. But anyway, you know, you've got these top companies, you've got this schedule, or this calendar that I thought was really interesting of sort of like trials in progress, which is, which is pretty cool to monitor as well, you've got the job board with tons of interesting

companies. From from bio age, I just had the CEO Kristen fortney, on the show, to like, loyal with saline, running a company focused on, you know, health span for dogs. It's just and then you know, sens Foundation, apres organization, and countless other awesome company that an organization, so you're sort of like building and then of course, the newsletter as like the media component clubhouse, also, maybe turning it into a podcast, all these different sort of angles, that are just hopefully collecting people and giving them ways to engage with the subject and, and learn more about the subject, keep up to date with the subject and all of that. So I think it's, it's really great. And I, personally, I'm really enjoying it. I didn't, I wasn't on board for the early newsletter. So maybe for the best that I missed those, but I've read some of the more recent ones, and it's really high value stuff. So encourage people to go and subscribe to that and give Nathan, you know, your email in case he gets banned from Twitter for these radical longevity takes, but I think that, you know, I guess one question I'm interested in to hear from your perspective, people may be tuning in who haven't listened to previous episodes or haven't followed you, or whatever it might be, might not even know really what we're talking about here. They have a sense for sort of like, oh, we're talking about, you know, aging and longevity. But what are they actually talking about? How do you introduce sort of fundamentally, and I think, even for people who who are familiar, it's always interesting to hear sort of a new frame of an introduction. So I'd love to hear sort of how you introduce the subject of longevity. And why sort of slowing or reversing aging is a hugely under appreciated, underfunded, sort of mission.

Nathan Cheng 33:42
Yeah, totally. I mean, there's so many different ways you can frame longevity, and so many different ways you can, you know, bring it up with other people. And, you know, it depends who you're talking to. Different framings resonate with different people. But I guess one of the most interesting ways to get people on board or just introduced them to it. Is this this question? I think, Kristin fortney or Laura Deming posed this question in, I think it was in a podcast, an a16z. podcast, maybe. But yeah, basically, the question is, why don't young people like why don't 20 year olds get Alzheimer's? Right? And there's this idea that, you know, we have all these age related diseases, and

we don't have any cures for them, right. And they cause a lot of suffering and the reduce our lifespan and health span. So maybe one way to address this problem is to actually get to the root cause, which is aging, right? Because if we can just reverse the biological state of you know ourselves and Our bodies back to a youthful state, then we wouldn't even have to contend with these, you know, these issues of Alzheimer's disease, Parkinson's, you know, neurogenic, neurodegenerative diseases, even like, you know, heart disease, all the major killers, right? So just from a perspective of medicine, I think we're clearly going to be on this sort of trajectory towards longevity and rejuvenation therapies, right? So, as long as medical technology continues to progress, we're basically going to go down this path of longevity, it's, it's the future of medicine. Right? So that's one way you can frame it. I think that's one of the best ways because the problem is a lot of people think of aging as something other than disease, right? Because it's sort of this thing that happens to everybody. And, you know, the FDA doesn't declare it, or define it as a disease. So but if you ask someone, just someone on the street, can you tell me what medicine is? Right? Like the the practice of medicine? Can you define medicine without using the words, disease and illness? Like how would you define it? Right? And they'll probably say something like, Oh, well, then the practice of medicine is trying to keep yourself in like a healthy, functioning way for as long as possible, right, which is basically the goal of longevity, biotechnology, we're just trying to do that for as long as possible and further than what we are currently accustomed to, right. But for people who believe in technology and the you know, the power of human ingenuity, then you know, it, it's very possible that we could, you know, extend healthy human lifespan beyond the status quo. And we should, right, that's, that's something that is very, very much a moral thing to do, in terms of reducing the suffering of humanity that's associated with biological aging. And it's just a beneficial thing to do in terms of, I guess, you could say, just the trajectory of human civilization, right? Because, you know, Balaji, also has this, this great essay, you know, the purpose of the purpose of technology is, is basically life extension, right? Because it's the ultimate way to reduce scarcity, because we only have so much time, right. But if we can just extend that indefinitely, or at least much longer than we're accustomed to now, then that's, that's a huge gain

in, in what's possible, you know, personally, and also, from a societal point of view.

Jake 37:59
Yeah, I think that's a great introduction from a couple of different angles, and definitely a lot of overlap with sort of the ways that I like to introduce the subject to sort of someone who just has no idea, you know, that that, that the first hump to sort of get over is like slowing and reversing aging is possible. That doesn't mean it's inevitable by any means, in, you know, 15 or 30 years, let alone 1000 years, but it just means it's possible, right? And we don't have enough evidence to suggest that it's impossible, and it seems overwhelmingly likely that it is possible. And it's just a matter of, you know, time and work and funding, and attention, and all of these different things. And I think that's sort of like the first hump to get over. And to get over that hump, sort of introducing the concept of like, you know, why don't people get Alzheimer's in their 20s is just like a really effective way to show, hey, you know, if we can put aging, you know, if we can slow down aging a bit and put some of these diseases that are associated with aging, just sort of kick the can down the road, to you know, instead of when you're 70, you start sort of developing these things when you're 150, then that's like a much, you know, longer, healthier life, theoretically. And I think that's a really powerful way to go about it. One of the sort of stats that I like to point to is the fact that if we were to cure cancer, it would, you know, add, like, I don't know what it is exactly three or four years, I think, to sort of the average human lifespan. And then same basically goes for heart disease. But if you can, you know, if the average lifespan is like 80, or something like that, and you can slow aging by 10%, then you're adding eight years and that's just 10%. Right? So I think there's all these different, really, you know, great sort of frameworks to sort of reset people's thinking and make them realize that, hey, this is something you don't, you don't need to work on it directly, but like, start acknowledging it, you know, maybe talk about it. If you want to add friends, it's like, pretty interesting, right? And, and maybe, you know, change the way that you see your life in the context of the world. If you think that there's a some probability that that this can happen in your lifetime, then then maybe that changes your life plans a little bit. Right. So I think

those are all sort of interesting angles to take, I guess. What is your, you know, I think one of the reasons it's sort of so underestimated is that it actually didn't make sense to pay much attention to until fairly recently, because it was just a, you know, somewhat of a hopeless endeavor, we didn't really have any signs to point to the idea that it might be possible, we didn't have, you know, this multiples extended lifespan and worms proven out, you know, 10s of percentages of increase in lifespan. And in my, in mice, excuse me. Now, we have sort of the signs. And so it's like a very new phenomenon that this somewhat, you know, it sounds very reasonable sort of suddenly, how do you think, you know, why are people having trouble sort of wrapping their heads around this? Why is it such an underestimated issue from your perspective?

Nathan Cheng 41:13
Yeah, that's a good question. I have theories, I don't know if I have definitive answers. Because if we had definitive answers, maybe we could solve the issue of the organizational problem for longevity, which is like not enough people working on it. I think, yeah, in one sense, it's just that it's still pretty new, like, you know, when the sciences first flushed out, right, so I guess, you can trace sort of the very beginning of longevity biotechnology to Cynthia Kenyon, right. With the C. elegans lifespan extension, you know, doubling it from by just playing with the, the IGF DAF two genes, right. So we found a genetic pathway that was responsible for life extension, you know, by a factor of two in these these little worms, right. So, but that was in 1993. Right? So it takes time for these things to just, you know, filter through the public consciousness through even the scientific, you know, community as well. I think partially, one thing that that really helped was a bunch of companies like well, well known people getting involved in, in longevity companies. So Laura has spoken about this, but some time in I think, 2013 or 2015, somewhere in that range. Craig Venter, right, obviously, very well known in in biotech, and, and Levinson, from Genentech, they both got into longevity, right, with Craig Venter with human longevity, Inc. and Levinson with Calico, which is Google's, you know, initiative. So it's really just this, you know, snowball effect, you need to get people to stand up and say, Okay, I'm going to risk my, my reputation, too, to align myself with these sort of radical ideas. Right? And, yeah, once

it sort of takes off, you know, when you just need more people to to get on, and it will grow exponentially, because this this idea is extremely powerful. But I think, yeah, it just takes time. And and the other thing that, I guess, is, perhaps an impediment is that we don't really have a good way of, of measuring aging in Well, in humans, right? Because we're so long lived, right? So, if we had a way to, you know, measure the effects of all these different therapeutics on biological age, then it would be more easy to convince, you know, the public that, you know, this is very much possible. But for now, you know, the, the results that we have in you know, mice, like rapid myosin and Metformin, they're, they're pretty small increases, but reproducible and not many people know about it. I and I guess why? I don't know maybe it's just we don't have enough people talking about it. And like, you know, I have a newsletter but and, you know, reason has a great newsletter, and other people like Mehdi yakushi also has a newsletter which talks about longevity, we just need more people talking about it. And if you think about, okay, what other media outlets are there? There's your podcast, of course, which is great. Who's doing this stuff on YouTube? There's like Eleanor, Shiki, who does great, you know, science, communication about biotech and also longevity, biotech. So I think it's just a matter of, you know, getting people organized. And these movements just take time.

Jake 45:17
Yeah, I think it's I mean, on the one hand, I totally agree. The only sort of caveat I might add is that, you know, it does, you know, while it does take time, I think the amount of time it takes is not set in stone. Right. And so, I was recently listening to Ilan on Joe Rogan podcast, most recent appearance, those are always a lot of fun. He was talking about how sort of the primary purpose of Tesla was to accelerate humanity's transition to sustainable energy. And, you know, he's he talks about how, you know, we are going to run out of oil at some point. So it is inevitable, either we sort of transition to sustainable energy, or we sort of, you know, we we basically go extinct, I think it you know, maybe that's a little extreme, but humanity is sort of, done for if we, if we can't figure something out, and so he wants to win Tesla just accelerate the timetable by which that evitable thing happens. And I think aging is somewhat similar. It's like, eventually, this idea, just given how powerful it is, and

how fundamental it is, it seems sort of inevitable that it will catch on and sort of be developed. But it could be 30 years from now that we sort of achieve 30%, human health healthspan extension, or it could be 300 years. And, you know, maybe, maybe one of those is actually sort of impractical, maybe it's more likely between 102 100 or, or 50, and 150, or something like that. But the point being that, I think, doing things like you're, you're doing help to potentially, sort of accelerate the time that it takes, even though it does sort of just take time. So that's why I personally, really just like a fan, I think that I think that your point, sort of towards the very beginning of the podcast was was well received by me, and that, you know, you could have gone and been a founder, and you still can, of course, and I'm actually curious if that's something that's sort of on your mind, but um, but I think that you're thinking about leverage, and like, if you can inspire 100 founders, that's actually maybe the better thing to do. And, you know, we don't need everyone to be a newsletter writer or a podcaster, or whatever it is, but we barely have any in this longevity space. And so, for starters, maybe we need more, and then down the line, you know, I'm sure you're learning a ton, sort of during these newsletters, and you're obviously have this science background. So maybe one day you will be a founder, is that is that something that's sort of crossed your mind again, at all?

Nathan Cheng 48:00
Yeah, totally. I mean, I always have that idea of, you know, becoming a biotech founder in the back pocket, right. There are some ideas that I think are really cool, and are definitely worth trying. But I don't think I would go down the path of like, you know, finding some very specific, you know, molecular target or, you know, metabolic pathway. And like trying to drug that with a small molecule drug, I guess, that stuff doesn't really interest me, I, I have more of a I have a more like, favor, or maybe I I believe that maybe cell therapies, gene therapies and replacement therapies are the most interesting. So I highly encourage everybody to look at, we're sorry to check out john Herbert's book, replacing aging, which he wrote just last year, and he goes over, you know, the argument that to fully reverse aging or, or, you know, cure aging, we will probably have to replace the parts of our bodies, you know, at the cellular level tissue level, and even at, you know, at the level of the brain, but he has, you know, a way of

getting around that issue and, and the, you know, the tricky questions of consciousness and, you know, your personality still being intact. But yeah, that's, that's something that's always in at the back of my mind. But just wanting to go back to your point about, you know, getting people involved in this space, and, you know, things taking time, but, but, you know, being able to accelerate things, if you actually, you know, join the movement, and I think that is that is super important, like taking matters into your own hands, right. You can't wait for, you know, billionaires to wake up to this and then you know, save the day, you know, there's There's so many things that ordinary people like, like you and me, right can just do today, right to get involved in longevity. And there was a great tweet by by john Carmack, where he was saying, Okay, if you can't build it, then fund it. And if you can't fund it, then champion it. So that's sort of become a part of my model where, you know, I see my mission is to grow a wave of passionate people, building funding, and championing technologies that extend healthy human lifespan. Right. So, anyways, yeah, so I think just, just don't underestimate what you can do today. Right? Because there's, there's the longevity industry is just so new, that there's so many things that people can be doing to accelerate progress.

Jake 50:54
Great. So with all of that said, I think an interesting place to go would be to hear about what sort of technologies or you know, specific drugs, maybe even are you most excited about most keeping an eye on? For the next, you know, for the short term as like the first few successes potentially, in the next? I don't know, 510? Something like that? number of years?

Nathan Cheng 51:20
Yeah. So that's a good question. Because really, at this point, we have we know we have drugs that extend lifespan in in mice, right. But we don't have anything yet in humans. But if we can just demonstrate, like even a small increase, that's going to really accelerate progress, because you know, we'll have the first zero to one in humans, we can prove that we can, you know, modulate biological aging in humans fairly easily, you know, if it's a small molecule drug, hopefully. So, yeah, so to your question, which ones are or which

therapies are most interesting to me? I guess, yeah, the ones that are most likely to be able to come to market or be approved within the next five years or so. So obviously, Kristin Courtney's bio age has two clinical trials right now. And they look super promising. They're in phase two. One is for unexplained adult anemia. And the other one is like, targeting immuno senescence, so basically, trying to improve the immune system response in elderly people who have COVID, right, and you can see that if they can get this, if the if they can get like a positive result in these trials, then that's going to be a huge, huge, like landmark results, like you will change everything, because not only do we have something that, you know, could potentially be taken for other for other indications, eventually, you know, age related indications other than anemia, or, you know, COVID, but you could, yeah, see this becoming something that targets other age related diseases, but then, on top of that, just the way that they discovered these drugs, right, so by age, uses, ml and AI techniques to mine, you know, these biobank data that they have. Yeah, that's just like an interesting way. Because hopefully, you know, that, that process of drug discovery, leverage AI can be, you know, reproduced, and they can find other drugs that would be that could modulate aging. So I'm super excited about that. And just, you know, the collision course between biology, biotech, and you know, Ai, or sorry, and AI, ml, right. And then the other things that are sort of interesting to me, are mitochondrial transfer, right? So, mitochondria are a very important system in ourselves, right? They, they do oxidative phosphorylation, so they help you take your glucose and convert it into ATP. And there's a lot of suggestive evidence that, you know, mitochondrial dysfunction is plays a role in in aging, right. And there's three companies right now that are trying various approaches to actually transfuse undamaged or young mitochondria into cells into your own cells. And they're targeting various indications. None of them are aging, obviously, because that's not an FDA approved indication. But you could easily see like if it's successful in these very Narrow indications that maybe they could be expanded to more general things to improve, I guess, metabolic function or, or the like. So that's very interesting to me in terms of a strategy that is like a replacement therapy that could, you know, potentially come to market in, you know, the short sort of five to 10 years. So the the three companies there are Salvy, Monrovia, Monrovia actually has a

clinical trial right now for Pearson syndrome. And the last one is matrix matrix bio. So, those are really cool. And then I think, two other really interesting approaches. One of them is young blood transfusion, right? So the thing that everybody makes fun of in, in like, the HBO show Silicon Valley, right, blood boys, but it's, you know, based on pretty solid science. So it's interesting, because, you know, this sort of plasma, if you're a few races, or plasma transfusion, is already a therapeutic, that's approved for certain immunotherapy immuno conditions like, yeah, so you could easily see that this could be translated pretty easily to the broader public, because it's already something that we do pretty routinely. And there's good suggestive evidence that it, you know, taking either the neutral blood or the young blood plasma from, you know, young mice, and then putting it into old mice actually rejuvenates their their tissues, including like, brain tissue. So that's cool. And then the last one would be like epigenetic reprogramming. So that stuff is really new. Obviously, you know, David Sinclair has some work on that. And 100 acampo Campo as well, doing like a transient epigenetic reprogramming. I think those are very interesting approaches. But there's so many different companies, like, there's like 100 or so maybe 100 200 companies in this space. And there's all these different approaches. And I'm excited to see which ones will work out.

Jake 57:30
Yeah, I'm definitely excited as well. And I think for people who sort of enjoyed that, that last bit and warm stay up on Nathan's thinking around these things, definitely, again, go follow the newsletter, he's sort of publishing weekly updates on, on what's going on and progress being made and everything he's excited about. So you can sort of, you know, if you're interested in some of the more finer points that then you can certainly go dig in there. I want to take it to the personal level a little bit and talk about, you know, I think it's funny, like a lot of people in the space, answering the question of sort of what they do personally to give themselves sort of the best chance at living long and healthy lives. In the meantime, while we don't have, you know, these, these more significant technologies and drugs and things like that. The answer is always like, Well, you know, not a whole lot yet. It's sort of like the traditional wisdom of, you know, eat well and exercise and get enough sleep and things like this,

maybe, like, take a vitamin. But you mentioned earlier, you have this sort of I think it's called the biohealth stack website, which which I looked through and it has like David Sinclair and Ben Greenfield, some some pretty interesting people and sort of what they do, and what their answers to the questions are. And I saw, you know, you have yours up there as well. And it's very, like sleep heavy. So I'm curious to hear, you know, your your thinking around sleep, as well as, you know, your your general health stack, as you might say.

Nathan Cheng 59:03
Yeah, it's interesting. You found that. Yeah, so the website is biohack stack and it basically, collate all these different regimens and routines that people use to extend their health span or lifespan mostly focuses on like, longevity researchers or people who are well known in the biohacking space. But, yeah, personally for myself, as you've noted, yeah, sleep is sort of one of those things that I struggle with a lot. Maybe it's because I'm always working so then you you tend to like, push the hours late at night because you're just working on that one extra thing. And then when you try and go to sleep right after like going from laptop to bed, it's it's obviously not recommended and you know, people say you should, you should stop looking at screens like a couple hours before That, and I just have a hard time doing that. But even the sleep that I get is sort of not great. So I have a bunch of sleep trackers, I have the aura ring, I have a Fitbit, I also have something called the dream two, which is a eg, sort of sleep tracker. So it actually can measure the the brainwaves while you sleep. And the when I when I got the dream to I actually compared it against, you know, all my other sleep trackers. And I found that Yeah, the aura ring and the Fitbit which just use kind of like motion tracking to to determine the different sleep stages. So trying to determine REM sleep and deep deep sleep, those were actually pretty inaccurate compared to the dream, which I just I guess to be expected, because they aren't actually measuring your brainwaves. But the one thing I did notice from you know, trying out the stream to sleep headband is I get like a lot of REM sleep, but not a lot of deep sleep, which could be an issue, right? So. So I do, you know, try and take different supplements, I have magnesium glycinate, which I tried for a while. There's this really great website, or I guess, web app called bio loop sleep, which allows you to do like end

of one experiments for your sleep that connects to one of your sleep trackers, like an aura ring or a Fitbit. And then you can do like these, you know, on off sort of end of one experiments, you know, trying different interventions like a supplement or, or meditation or something like that, right. So that's interesting. But in terms of like more of the hardcore stuff, like, you know, taking rapa myosin or Metformin? No, I don't, I don't actually take any of those because I feel like we don't have enough evidence. I mean, you if you believe that, you know, preclinical like mouse, mouse studies are good enough for you, then I guess that's your own decision. But that's not something I would recommend. And people like Nir Barzilai also don't recommend you, you take Metformin for, for anti aging. But then just other things like vitamin D, that's kind of important being in Canada when the winters are quite long, so you don't really get a lot of sunlight. I also spend a lot of time indoors, working. So but other than that, it's just like the basic stuff. So you know, intermittent fasting, not eating too much sugar, exercising, so I really like doing high intensity interval training. And, you know, just some basic weightlifting, although that's harder now, because of COVID. And all the gyms here are closed. Yeah, so other than, you know, some basic stuff, you know, a couple heavy sleep trackers, I don't really consider myself as like a hardcore biohacker or anything like that. But okay, maybe I should say this. The out of all the people that I've sort of, you know, looked at their, their stacks and stuff like that. I think the guy that has the most sort of like, the most robust sort of approach and analytical approach to doing this kind of longevity hacking is probably Michael Lustgarten. He's a researcher at Tufts University. And he has like, like a very, you know, interesting and detailed approach to you know, measuring his, his biological age, and all the different interventions that he's using to try and modulate that. So I think out of all the people if you're interested in this, like longevity hacking interventions, you should go follow him.

Jake 1:04:09
That's great. Yeah, I sort of I read your house doc on the website, but I sort of hoping there might be some new magic addition in there because you're, you're you look quite young so i thought you know, maybe maybe he's got something that's that's working for him, but whatever it is, I'd say keep it up. And on the sleep thing, I

certainly can sympathize there. I think I've come to believe that it's probably you know, good to sleep a good amount but but I sort of, I don't know if it's because I want to or because I'm not like totally there yet. I sometimes question like, well, if it you know, if sleeping eight hours a night, if it doesn't really change how I feel day to day, and there's certainly argument that it does. I think I generally feel better when I sleep more But, but throw that out the day to day argument and say, you know, it extends my, my health span by 10 years, well, I'm actually sleeping, you know, eight hours or six hours is two hours a day I'm spending sleeping instead of awake, and sort of it almost like cancels out in a way. So I don't know, I sort of go back and forth on the sleep thing. I track it with aura. And I think that that's really important because you know, what gets measured gets managed is sort of the the quote I always think of, and, you know, regardless of what your goal is, if you want to sleep eight and a half hours, or you want to sleep six and a half hours, you're not going to sort of meet it if you don't have something to measure it. And so I think, you know, maybe for people who want to go to the next level, it sounds like the headband that you have, is very helpful as well. But just an important thing, I think to know is like anywhere you want to improve, find a way to measure it. And that goes for you know, you mentioned intermittent fasting, I think when I was getting started, I used the zero app, I just sort of do it habitually now, and I don't use the app anymore. But that's sort of an important thing to note, I think I think, you know, we're young guys. So we don't actually have to do that much yet. Like, if I was older, I might be experimenting with that forming myself. But you know, just by the lack of like, a ton of proof thus far, but I think we're so young, we can fortunately afford to sort of be patient and hope that some more concrete discoveries are made and just be healthy. And the more traditional ways for now, and, you know, do our best to increase the timeline, like we spoke about earlier. I think the appropriate way to end this conversation is to talk about a question that I was actually asked recently, on a podcast when I when I went out as a guest that they opened up the podcast with this was the Lewis and Kyle show, if anyone wants to go listen, but the first question they asked me out of the gate was basically, how long do I expect to live? So I would like to turn that on you? And of course, you know, you don't have to just give a one number answer, you can sort of talk it through a little bit

how you think about it, but curious to know sort of how you think about that question?

Nathan Cheng 1:07:11
That's a good question. And I feel like a lot of people get caught flat footed trying to go to make a reasonable estimation here. I'm going to say there's maybe a 50% chance of me possibly living past 120. And then that's all I'm gonna say. Because really, everything is speculation at this point, right? You can't really project what is going to happen in the future in whatever timeline, but I do believe that if we can get most of society on board, working on, you know, this problem of biological aging, that it could be very possible to have some sort of longevity escape velocity, right. And then there's also the the idea that, you know, AGI might be able to come in as like a sort of like a save the day, this x Mackinac sort of thing. And there's different, but people don't really know when that's going to happen either. Right? So, to me, I think the best way to just frame it is to just say there's, there's a possibility of humans, right? People, people, mostly our age, you know, in the early 30s, or 20s, or whatever, I think there's a good case to be made that we will live significantly past the, you know, the maximum lifespan records that we have now. And if you look at max roser, he has a bunch of, you know, data or a world and data, that's his website, he, he made a tweet today, that was really cool, where it's just showing like the survival curves. So basically, on one side, you have the percent of a population that has survived past a certain age and then on on the, you know, on the x axis, you have the age, right, so this is like a pretty common curve that you see in a lot of these most lifespan studies. But if you do it in humans, right, you can actually see that like the top 10% of you know, long lifers whenever the, the the people who survive. You can see that, yeah, the top 10% or even the top 20% like that, that maximum lifespan has actually been increasing as well. And that's, that's very interesting to me that, you know, that even without any sort of major technological or bio longevity biotechnological advanced, we still get these sort of increases that are happening. And I think there could be like a being in the future as long as we get everybody on board, right? So I can't predict what that's going to be like, because that's more like predicting how

society is going to organize itself. And that's, that's a harder, harder question. But I'm curious, what did you say?

Jake 1:10:25
Yeah, it's funny, I actually responded very similarly to you. I didn't give any, you know, specific numbers or, like super specific probabilities. But I basically said, I think my year mark was basically the same as yours to I don't remember exactly, but I think I said something along the lines of, I think there's like a reasonable chance. You know, I don't know, if I put out exact numbers, but 30 to 70, you know, in around 50% chance that I could live longer than 125, I think I used instead of 120, either, right? For the same reason that you did, basically to say, longer than any human has ever lived on record. And that's sort of enough, if you can say, you know, a 50% chance that I outlive anyone who's ever lived. That's like a pretty bold claim. And if you got someone to subscribe to that, then it's saying like, Okay, well, now you're on board, like, let's, you know, you're you're pro longevity. And the more people that are pro longevity, the more funding will go to it, the more attention the industry will have, the more people will want to work on it, the more kids will grow up saying I want to make a difference in longevity, and then doing so and podcasts and newsletters like we're doing. So I think attention is sort of you mentioned earlier, like, you know, if you can't build it, fund it, if you can't find it, champion it. I think championing in terms of attention is sort of the first thing and then with the attention comes funding with the funding comes progress. And so that was sort of my, my intention as well, just to sort of break the idea that we can't live longer than anyone's ever lived. And it's actually not that useful, from my perspective to talk beyond that, like, what are the chances I live beyond 250? Well, you know, I could speculate, but it's, you know, what's the point, right? The idea that we can live longer than anyone else has ever lived is sort of enough. And this is some people are sort of scared about, about longevity. And we could dig into that another time, maybe. But the thing people sort of fail to appreciate, I think, is that this is actually heard this from vitalik, recently on a podcast with Julia galef. I hope I'm pronouncing that somewhat reasonably, right. But he talks about how aging is not like the internet, where it sort of comes. And over 20 years, like radically changes the world, or even

crypto for that matter. It's something where, you know, we only age one year at a time. So even if we have all these these great technologies that really increase the human health span, we're not going to have 150 year olds in 10 years, because no one's 140. Right. And so this progress will actually happen over a slow time. And if we can just for now, get sort of, you know, come to accept the idea that we can go beyond 120 or 125. I think that's enough. And so, I think we thought about the question, somewhat similarly. But, but yeah, I appreciate you, you coming on. I know we've gone over time already. It's funny, these, these longevity podcasts I do, or the the longevity focused ones, at least, always end up going longer than in most of my other podcasts. And maybe it's something to be said, for the way that, that people like you and I and all these other folks in the longevity think we're not in a particular rush, because we might have 125 years at least.

Nathan Cheng 1:13:41
Yeah, totally enjoyed our talk as well. Thank you.

Jake 1:13:45
Great. So where can people go and follow your progress? You know, we mentioned the newsletter, if you could just sort of point people to the first place you want to send them and then you know, hopefully they can go do so and follow along in the future.

Nathan Cheng 1:13:59
Yeah, so um, my newsletter, which is longevity market cap newsletter is that sub suubi got longevity market cap.com. So you can go there to subscribe. It's usually once a week just sort of a roundup of interesting things that that are going on in the longevity, biotech industry. It also has like more in depth research reports that I release maybe once every two or three weeks. And then if you want to follow me on Twitter, my Twitter handle is real. Nathan Chang, that's ch e n g. And yeah, I just, you know, post my thoughts there as well.