Is the First Person to Live to 1,000 Already Alive? Aubrey de Grey Thinks So Transcript

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Opening on Longevity Escape Velocity

Now here's the thing. If that happens, when that happens, and when experts start to say optimistic things and everyone starts listening, right, the consequence is going to be immediate.

Not for how old people actually are looking for therapies, but even exist yet. Right. But for how long? People think they're going to live. At the moment, virtually everybody in the world believe that they will live just a few years longer than their parents did.

And most of the world will move literally pretty much overnight to an expectation that they're probably going to still be around when these therapies do come along, even though they don't exist yet.

And therefore they will be able to live indefinitely. Welcome to doctor Talks, the podcast where every episode leads to a healthier you. Join us as we navigate the world of optimal health, uncovering groundbreaking strategies to conquer chronic disease.

In each episode, we'll bring you the latest insights from leading health experts, medical innovators, and wellness warriors. If you're seeking to transform your health journey, or if you're looking for answers to burning questions.

You've come to the right place. Get ready to unlock the secrets of lifelong health and vitality. This is Doctor Talks, real talk from real doctors on the issues that matter to you most.

Hi everyone! Welcome to Rad Cars, where we explore the science and soul of super longevity. I'm your host, Doctor Melissa Peterson, founder of the Human Longevity Institute.

And today we have a true visionary, a man who has redefined what it means to grow older and more importantly, why we may not have to. Our guest is Doctor Aubrey Degree, a biomedical gerontologist and the architect of the Sens framework, a revolutionary approach to reversing Beijing by repairing the cellular damage that drives it.

Known for his bold prediction that the first person to live to 150 is actually alive today, and he's extended that and we'll talk about that even more.

Aubrey has been at the forefront of the longevity revolution for decades, and he is the president of the Longevity Escape Velocity Foundation, where he's leading groundbreaking research to extend lifespan and healthspan like never before.

So get ready, because we are about to engage in a mind expanding conversation on immortality, radical life extension, and the future of humanity itself.

That's a big order. Welcome to the show, Doctor Aubrey to Gray. It's such an honor and pleasure to have this time. Well, thank you, Melissa. Thanks for having me.

Yeah. You know, I know when you sit down for a conversation, because this has happened with us in the past. Everybody starts with, tell us about what got you here.

Tell us about your work. But I kind of want to jump right in in a little different approach, if we may.

Introducing Aubrey de Grey and the Longevity Revolution

You are known for coining the phase, the phrase of longevity, escape velocity, or the founder of that that foundation, literally and we're at an interesting time where as you've kind of said, hey, this this big idea is possible.

We can live to 150 and well beyond when we understand the concept of longevity escape velocity. I want you first to. Yes, you've been asked this many times, but for our listeners, explain longevity, escape velocity.

And then I want us to dive right into this conversation of hundred and 50 and beyond potential. But let's start with longevity escape velocity. Yeah. So you're quite right.

I coined the phrase, about 20 years ago, and it was pretty much about the exact same time that Ray Kurzweil started talking about the concept of living long enough to live forever, which is broadly the same concept.

So essentially the idea is that if we, in fact going to gain significant, increases of healthspan and lifespan by rejuvenation, by turning the clock back rather than by slowing the clock down, then we will be buying time by doing that.

In other words, if in other words, the people who will benefit will not be, kids or people who haven't yet been born, but rather people who are already in middle age at the time that these interventions come along.

So then we have to, well, initially these, treatments, inevitably going to be, imperfect. They're going to give some postponement of, the health problems of like, life, but not indefinite postponement.

So let's say that they give us 28, then, someone who's, let's say 60 is going to, you know, be rejuvenated to something like biologically 40. And, they won't be biologically 60 again until they're chronologically 80.

Now that's good, but it's not good enough. So, the question is, what's going to happen after that? Now, the first question we have to ask is, what do we mean when we say that they will be biologically 60 for the second time?

It's not really exactly correct because biological age, we can define, the amount of damage that is that exists in the body, the amount of age related damage, and the fact that these therapies will be imperfect at this point, means that we can say, well, okay, the, the some subset of the damage that the treatments work on and actually eliminate from the body in some subset that it does that they don't eliminate.

That's called, the heavy damage and the difficult damage. Right. Then when that person comes back in biologically 60 for the second time, what that means is that the total amount of damage they have in their body will be the same amount that they had before we started giving them the treatment.

But the problem is that it'll all be the difficult damage because they every damage is going to be, you know, eliminated periodically, by the treatment.

So that means we have a problem because they, difficult damage will continue to accumulate because the treatments don't work on it and the person's going to get sick or died.

And it's some of the other effects. It's going to happen later. But now we come to the concept of longevity escape velocity. Because what's going to happen in those 20 years before the person gets to be biological?

60 for the second time is the people like us, the researchers are going to be, beavering away improving the treatments, including improving their comprehensiveness.

So what that means, of course, is that it's going to be, if you like, shifting some of the difficult damage into the easy category. So, when the person comes back in, they're actually out in the biological therapy for the second time.

It's not going to be as I just described. Instead, what's going to happen is we will be able to re rejuvenate those same people so they won't be biologically, fixed for the third time until that thousand and ten.

And so on. So this leads to the definition of the term longevity escape velocity. It is simply the minimum rate at which researchers are going to have to continue to improve the comprehensiveness of these treatments.

So that's to stay one step ahead of the problem. So the people who are always getting state of the art treatment will have only a manageable amount of damage in their bodies, not the amount that causes them to get sick.

And, this really only kicks in once we get those first 20 years of increased life.

Defining Longevity Escape Velocity

Because until then, you know, there isn't enough time for the researchers to improve the treatment, right? But once we get those 20 years, the hub of done.

Okay. You have. This is fantastic. So I want to just take a moment. Many of our listeners are quite educated in this field, and they've been following you and many other great luminaries like yourself.

And for all of our new listeners coming in and really wanting to wrap your head and heart around this content message, what doctor De gray just shared with us is, first and foremost, longevity has become so popular because we truly it's not.

When we slow and reverse the rate and pace of aging, we now know that we can. And so it really is saying two what extent? So what you just shared is first, we've got the easy damage and the difficult damage and the easy damage.

There's a lot out there just in lifestyle and some of the initial treatments that are really kind of coming to market. And we'll talk about these in our conversation today, just even some foundational, you know, similar tricks.

For example, there are certain things that we can do to start to clean up some of that easy damage. What I love how you said at this time is that difficult damage, that's where we kind of hit the wall.

And so it's allowing researchers like yourself to say, how do we get more precise? How do we get more corrective, how do we get more regenerative in continuing to optimize the system.

So step one, we truly can slow the rate and pace and reverse the rate and pace of biological aging. Now for everybody that's new that correlates with all cause mortality, sickness breakdown, chronic disease.

So if we can slow and reverse the rate of aging, we slow and reverse the rate of breakdown, dysfunction and disease. And so when we think about this, Aubrey, you know, right now the predominant conversation that we hear a lot of other experts in the field talking about is compressing first the morbidity window.

Right. So hey, and I like you're saying that you say it differently and you always have which is why you are who you are. The current lifespan, global lifespan.

Because obviously we know there's been changes. But if we take the average globally it's about 73.3. And on average we're in our 60s, you know, like it's kind of between 63, 65 and 69, depending on which stat you're looking at of when we lose health.

And we are. So the idea is we are living longer but not healthier. So this first everybody's saying compress morbidity, compress morbidity. But if we just, you know, should we be striving just to shorten that span before death.

Because your work in this concept around longevity escape velocity is really saying, hey, this we could potentially we could, we could eradicate this decline.

We can continue to clean up this difficult damage. So how do we shift society's mindset? Should we should the

main conversation be compress morbidity, compress morbidity.

And or you know, how do we shift from simply dying healthier to not dying at all. Right. Yeah. I mean, the whole concept of compression of morbidity is a real problem right now because it is still too much of the conversation from the expert community.

The the term was coined in 1980 by a perfectly, you know, you know, unsuspecting young medic. And I'm Jim Frith. Who was Stanford? He, you know, he was told by his, you know, PhD, colleagues that, there was some kind of natural limit to how long people can live.

He didn't know whether there was a natural limit or he knew the metric was that, in fact, we were extending healthspan. But, by by small amounts, but nevertheless extending it.

And so he just said to himself, well, okay, if there's a maximum that we can get to in lifespan, but we, improving healthspan, then we are compressing the gap between the two.

We're compressing mobility and that seems like a good thing. It. Well, you know, I mean, the overall amount of suffering that happens as a result of aging will be diminishing.

So, you know, let's try and keep doing this. The community, especially the more politically correct, end of the spectrum and the expert community who are more about, you know, getting the next grant applications funded than anything else they left on this.

And it became the absolute mantra of the failed. And honestly, it still is, which is a huge problem because, it, it it it messes up the priorities, researchers and or federal funding of research.

The, you know, the thing is, lifespan is fundamentally a side effect of health. But the longer you stay healthy, the longer you're going to live, the less likely you are to, to die in your sleep tonight.

And we do see, as you say, they vary depending on how you measure whether how how you define whether someone is chronically sick yet, one can argue that we've had some small amount of compression of morbidity, or some people can argue that we've had a small amount of expansion of morbidity, but these are rounding errors compared to the amount both healthspan and lifespan have increased since, let's say, World War two.

And of course, when we're talking about the industrialized world, everything that happened since World War two has been in relation to delaying aging, delaying the health problems of aging, because the the health problems that existed in the previous century or since the beginning of civilization, namely infections that were killing people off at a young age, but hardly kill anyone anymore.

And as you say, the world life expectancy is now well over 70. I think it's that I think as of 2015, there wasn't a single country in the world that had a life expectancy below 50.

Even this up there in Africa, you know, it's it's really good news because, you know, it means that we're bearing down more and more on infectious death.

But of course, that means that even in the poorest countries in the world, the biggest health problem now is aging. So, yeah, absolutely. The, the, the rhetoric that comes out of, places.

And in fact, I have to confess that my, the country of my birth, the UK is probably the worst at this in terms of the rhetoric from the experts, is to somehow, you know, not entirely deny that lifespan is a, side effect of health span, but to kind of apologize for it rather than celebrate it, which is bullshit.

So I believe that we absolutely need to focus on health and but we need to celebrate the thought effect. And of course, that becomes even more true when we look at the rate at which we could potentially increase health.

But because even if you're not compressing morbidity at all, you're only delaying mobility the faster you delay it. The less mobility people have. And and of course, the limit to that is longevity escape velocity.

When we get to the point where we're postponing the, health problems, black life, the mobility section of life span, let's call it, faster than time is passing, so we never get to it at all.

That's the plan. So in theory, with the when we really dive into the longevity escape velocity, simply saying that we really can escape death, That's right.

And, well, I mean, of course it's not completely right because I'm not working on stopping people from being hit by trucks, you know. Of course, of course. So after right impacts.

But I'm very happy that other people are working on those things, you know. Yes, yes. The longevity revolution is about more than just searching online for a few hacks, or any one of us moving our biomarkers in the right direction.

It's about coming together to learn, share, to connect and create the unlimited future we want. That's why you need to be at Rad Fest 2025, in Las Vegas from July 10th to the 13th.

Rad Fest the Revolution Against Aging and Death is proud to be partnering for the first time with Doctor Aubrey de Gray and Longevity Escape Velocity Foundation.

The form the single most comprehensive, advanced, informative and inspiring event on age reversal for a general audience. Meet the people you want to make forever with Rad Fest 2025.

Take advantage of lower advanced pricing now at Radford Scott. And that is such a bold idea. So okay, I really actually I want to celebrate that you and you know, I've heard you recently on some of your more recent interviews really doubling down on the saying, hey, you know, we're not celebrating that the by product, you know, longevity is actually a byproduct of being healthy.

We're not celebrating lifespan like we keep talking about health span. Because to your point, that's really where we've looked to say, how do we compress morbidity is to say let's focus on health span.

And yes, I'm all about it. I want to help more and more practitioners know how to help their their patients and their clients be healthier now for longer tomorrow.

So that is a piece of it. And yet I believe that what's so interesting, and we love to talk about here on Rad cast is this idea of okay, sure, sure.

Compression of Morbidity vs Radical Life Extension

A lot of people are out there doing that and that's beautiful. We already know a lot of that. Let's talk big stuff, like the big things that we want a10x our potential of how we think about what becomes possible.

And so so let's dive into a moment that, you know, you were one of the first people to say out there in the world, which now it seems like, oh, yeah, of course we can.

But 20 years ago and you said, hey, the first person that could live to 150 has already been born. People were like, what? Because as of this time, when we look at science in what's kind of, you know, out there, it is postulated that the human life expectancy, what we're able to live to is around our 122, because that's the oldest record.

So we think, well, that's all we really kind of know on paper. Could it be possible to live longer? Maybe. But we don't have any proof. Right. And so then we look at the data of lifespan and we see what lifespans Tappan Allen average in the 70s.

You know health spans tapping out in the 60s. So yeah. Step one can we improve 60 to 70 70s to live better all the way till then we can. But I'm really curious and I want us to explore.

If you've been saying for a long time now that we can easily, easily live to 150 and and you've also gone on to say even a thousand, if we think that capacity understanding longevity, escape velocity, then like there's this gap like, okay, but why do we only think we can live to 122?

Like what? What needs to happen first in the scientific community? Or is it already now been adopted like, yeah. One 5180 is the new norm. I feel like we have this gap that nobody's really talking about life expectancy versus, you know, escape velocity, potential.

How do you help us wrap our heads around first bridging that gap? Yeah. I mean, you know, it's a it's a network of idiotic assumptions that that have led to all of this.

And, and honestly, you've touched on several of them. And in that question, the thing is, the idea that the maximum we can get to at 122 is like it's a statement about the past, it's a statement about what might be possible in the absence of medicines that don't yet exist.

I mean, by definition, right? Yes. Yes, I should I mean, I think that's perfectly reasonable. I think it's exceptionally unlikely that anyone will live past 130, with, today's medicine, however.

Well, they optimize their lifestyle, you know, even if they use the kinds of medicines that exist, that they're experimental today. So, when we talk about the things that we can do today, whether it's lifestyle supplements, you know, diet, or even the, the early stages of rejuvenation, that and actually analytic that you mentioned earlier, you know, these are parts of the, solution, but they won't get us those first 20 years of life that I was talking about earlier.

I might get a couple of years because there is a threshold. Yeah. You have to get to a certain level of comprehensiveness of the depth, in order to get those first 20 years.

It's only after that that we've done the hard part. You know, at the moment, we're still very. If you like, we can fix the really easy damage, but we can't fix the fairly easy damage.

We've got to fix all of the even fairly easy damage first, and then we get onto the difficult damage later. So. So, we're not that longevity escape velocity yet.

That's the critical thing. Yeah, yeah. I mean, the people just make up these nonsense stories, you know? Of course, we're very familiar with all the stories people tell themselves about why aging is a blessing in disguise.

So, you know, I put it out of their mind. It's the same deal, you know, talking about, being some kind of natural, limited lifespan. It's just a distraction, you know, because it's not talking about medicine.

And and a job is to put that to one side. Now, in the expert community, you know, almost everyone has to play politics in this because almost everyone relies on, you know, staying on the right side of the people who give them money, which means, you know, the government in the case of academics, because I have to get an application funded doesn't really mean the government.

Actually, it doesn't mean each other, because, of course, what happens in government funding is this horrible thing called peer review, which, where, you know, people evaluate each other science and, decide who gets money and there's never enough money to go around.

So the people on these panels are always desperately looking for a reason. To say no means that, they can get away with. And I really think the reason to say no is, oh, this person said something irresponsible to the media yesterday.

You know, so everyone has to be ultra conservative in what they say. And that means that, even though they would like to say more ambitious things, they only will be able to say more ambitious things when the data from, everyone's laboratories starts to, give them permission to do so.

If you like. Thank you for sharing that honest, insight, because I don't believe the public understands and appreciates that enough that that really is what is happening behind the scenes.

And so, you know best not to overpromise under deliver, you know, and, and be more conservative than more exciting. And yet that keeps us and more of the same.

And again, I applaud you. What I've always enjoyed about listening to you and having conversations with you is while you still honor to some extent, because you have to and you're in the research side of it, some of the conservative elements, because you're you're quick to say, hey, this is possible.

And we're still it's a 5050 on time or, you know, you still give these, enough cushion, so to speak. So you'll share kind of the big idea, and you give enough cushion so that it's still in the the parameters of conservatism, so to speak.

Yet we do need more voices. We do need more conversations like this to say and that. So much more really is possible. And what I want to look at right now is I want to look at the research that you have going on over at your foundation, because I know that you've been stacking some of these different, you know, regenerative and, you know, cell reprograming type of approaches in your lab with the mice studies.

Because I'd like us to dive into anything that you can share with us, the just that you are seeing or that is suggestive of some of the early data sets coming out from the work.

And and then I want us to dive into what we do know of the easy fixes. Right. So the the fixes already the fairly easy damage. And then like so you've laid out we have we're 20 years away at least from truly heading longevity escape velocity.

We've got some immediate short and long term solutions that we've kind of identified. And you're identifying it in your lab right now. So walk us through what you're seeing that helps us to have a framework both for the clinician out there potentially to be thinking about as well as the layperson to say, okay, what could this mean for me and my everyday life for these easy fixes on that?

Yeah. So first of all, in terms of the time frame that I think we have to wait before we get to longevity escape velocity, actually, my current estimate is better than what you just said.

It's, between 12 and 15 years from now.

Why 122 Is Not a Hard Limit

That at that at that point, we have a 5050 chance of having achieved that 20, postponement of, of health of, of of the plan. So, yes. What are we doing? Well, yeah.

How do you say we, combining a bunch of treatments in the same mice at the same time? Because it's a combination experiment that had a lot of treatment arms.

And so you've got like a thousand miles at the beginning. These are big, big experiments and very expensive, unfortunately. But, yeah, the idea is to try to reach, not longevity escape velocity because, as I say, that involves, you know, iterating later on.

But, the kind of mouse equivalent of longevity escape velocity, which I call mouse mat robust mouse rejuvenation. And, the idea is to, to, to do this with rejuvenation treatments.

So to put numbers on this, the typical mice that are used in these experiments live, on average, about two and a half years. And, we don't do anything to them at all until they're already one and a half years old.

Okay. So, they've got one year to go now, here is the thing that is aggressively swept under the carpet by almost all people who work on the biology of aging.

Everyone who works on the who works in any research area has to emphasize the successes they're making, the progress they're making, and everything. But the terrible fact is that we have made basically no progress in extending mouse lifespan for decades and decades.

If you do this kind of experiment I just described, do you take mice that are one and a half years old? They get one year to live. Then the best that we can do today is to extend that life by about four month.

Okay. Now the problem is that 50 years ago, we could already extend my math lifespan by for a month. Starting at one of your adult. We've made zero progress.

Despite all the stuff we found out, all the treatment, all the stuff we've been developing that is the glass ceiling that everyone quietly doesn't mention.

But it's huge. Because what it means is that when we do crack it, when we do get a lot more, it's going to completely change the way that the expert community thinks about the malleability of aging.

Of course, not just in mice, but not long afterwards in human. And so we've set ourselves a goal of getting of troubling those for a month. In other words, getting an additional year or 12 months of life for these mice that are wound up before we start.

So on average, they live until they're three and a half years old rather than only two and a half. That would, in my view, completely, my job would be done.

I could just retire at that point because the, because everyone in the expert community will be able to do what they don't feel they have permission to do now and go and talk to people like you and people like, you know, Oprah Winfrey and Mr.

Beast and Joe Rogan and anyone like that. Right. And, and, and say, yeah, you know, this is the breakthrough we've been waiting for. And while we're not telling you that we weren't getting, and, and yeah, there is no, there is no way anymore to argue that aging is in any way immutable.

Rejuvenation works. You know, I've been saying that for God knows how long. But that's because I'm feel able to do it on the basis of much more preliminary evidence in fact, the main evidence that I use isn't evidence at all in the normal sense of the term, because all I do is I start from the fact that the body is a machine and it's a really complicated machine, but it's still a machine, which means that its function is determined by its structure.

So it's going to carry on functioning at full capacity. But mental and physical, you know, so long as it doesn't accumulate too much damage. And we know that if you take simple machines like cars or airplanes or whatever, and you do comprehensive preventative maintenance on them, then they don't have a warranty period anymore.

Or rather, they transcend their warranty period. You know, vintage cars are by definition more than 100 years old. You know, they were not built to last 100 years.

They were built to last any of the 15. Right. But comprehensive preventative maintenance just a bit more comprehensive than most of us do. Right? Because most of us don't don't care about our cars very much.

And we're perfectly happy to buy a new one. Right. You know, that was all it took. And these cars are going to last another hundred years without any difficulty.

And so it's just the fact that's all I needed to, be able to say with confidence that it's just a matter of time before we get to longevity escape velocity.

But my colleague, who, perhaps not trained in mathematical sciences as much as I am, have had much more difficulty with this. It's only now that a few of them are coming out and, you know, starting to say more aggressive things go church is doing.

So I want to clarify doing so. You know, I make fun of these people because, you know, I wrote a book called Ending Aging in 2007 with that 17 years ago, and David Sinclair wrote a book, 11 years later, it's I more or less the same thing.

Yeah. No, you know, I have a great friend of mine, you know, do I think it took him 11 years because he's more of a coward than me, you know? And so I think it's simply because he has the misfortune to be a professor at Harvard, and therefore he, You know, it wouldn't if he'd written that book same time.

I bet he wouldn't be a professor at Harvard anymore. He'd been fired. Are you ready to redefine aging and unlock your full potential as a longevity leader at the Human Longevity Institute?

Our world class certification programs train doctors, coaches, and wellness professionals. How to deliver cutting edge, integrative longevity health solutions so people can live better today for longer, healthier, and more vibrant tomorrows.

If you're ready to join the Longevity Revolution, visit Human Longevity institute.com to enroll and become a practitioner today. Yeah, that is, incredibly well.

I love it that that's a great statement. Okay, so there is so much you always get my my brain going. A couple of things I want to do, I want to bring up on all this.

So right now you're, you're in I believe you're in the second year of studies with your mice somewhere, right? Yeah. Right. So this is obviously a program, we want to do a sequence of these studies.

And the first study began early last year, so it's nearly done. We, as I say, we started a few months, 19 months to be precise.

Research, Mouse Studies, and Combination Therapies

And so I think there's literally half a dozen mice left at this point. Out of the 1000 that we began with, but that me but the mice that are still a lot, of course, you know, pushing three and a half years, that well, three and a quarter years anyway.

But that's not. But of course, I was talking about the average. We have not we have not in this one in the first experiment, beaten that glass ceiling a full month, the life extension that we got on the at the average worth about for a month again, which just tells us, you know, we need to, try harder.

What I want to do next, if then the next study is throw 7 or 8 interventions in at the same, if I might, at the same time, you know, covering more of the basic, if you like.

And, of course, we've also learned a lot of, over the past year and a half, not only from our own study, but also this constant literature coming out that everyone else in the community doing stuff that helps.

So we definitely know what we want to do. At the moment, my only focus is bringing in the money to pay for it, because, you know, this study do cost a few million dollars each.

Yeah, and that's substantial. And hence why, you know, there's there's a delay with everything. And as you said, there's only so much money and there are so many different studies going on and peer to peer research.

So it's kind of the gift and the curse of it. And it's it's really interesting because also there becomes this, like you said, you're the researcher that creates the the information for then the practitioners, the clinicians to then be able to be more informed in how they're going to think about it.

And the options available in in treatment. And it is always interesting because things in the closed system, like a laboratory versus an open system, right.

If we think even at a genetic level, epigenetics, everyday life, humans out in our every environment is different. We all have different loads demands coming in in this little exposome container that we live in.

And so it is really interesting, you know, how do we and so I'm curious and I don't know if you can share any of this, I'll share a little bit of my approach in it as a clinician.

But I'm curious if when you start to stack these different interventions that you guys are doing, is there a way? So like you said, there's kind of the really easy fixes.

There's the slightly more challenging easy fixes. And then we get to the difficult. So there's kind of this, you know, phase one, two, three. If I'm going to simplify of the level of difficulty of what's presenting with aging.

So just the biological process of aging comes with a certain amount of breakdown in the system impairment in the system. And so the research is saying what interventions can we bring in that are going to first clean up some of the basic stuff and already help us to get to that four month ceiling, okay, that we know how to do, but how do we go beyond that?

Because that's where it starts to get a little bit more challenging. And what do we layer in? So do you have an approach a methodology of how you all is it just throw the kitchen sink in. Let's just keep throwing the different interventions that we know as an individual.

It's analytic versus, you know, cellular reprograming telomere extension. Like we have these different things. Do we just throw them all in together or is there a if you think about cellular health, do you kind of come in and say, okay, step one senility, let's reduce and remove some of this inflammatory inflammation burden to like help get some of the easy stuff out and then come into the systems not as noisy.

It's not as overloaded. Now we're going to stack in the next. You guys kind of stack them over time. Just load them all in together. How are you approaching systematically the idea of these?

Yeah. Great question, great question. So let me let me, talk a little bit more about my first and then move on to the situation in humans. So in the mouse studies of course there is a fair amount of rational design.

If, you know, we're trying to, choose a selection of interventions that, as different as possible from each other. So we're not just duplicating effort to big and having multiple things taking the same damage.

However, you know, with any divide and conquer approach, which is what they say is right. If you're doing anything in technology, you've got these two phases, right?

You develop the individual components and then you put the components together. So we're taking components that have already been developed individually and in, you know, and regular engineering.

Usually putting them together is the easy part. You know, you kind of know what's going to happen. But since we're working here with a system, living, a living organism, whose composition and mechanics and, mode of operation, we have only a very poor understanding of, that means that there's a much greater chance of getting surprises.

Sometimes. Not good surprises. When we do the putting together part. So in these experiments, one thing we're doing is we're, not only having, treatment group that gets all of our treatments or four of our treatments, in this case, we're also looking for each of the treatments, leaving it out so that we have three out of the four, so that we

can identify antagonistic interactions.

In other words, cases where treatment for canceling each other out in some way. Yeah. The other thing, though, on the bright side, that we have is even though we know what the treatment is supposed to do right to the mouth and what type of damage it's supposed to repair, there are knock on effects, things that happen as, you know, a consequence of eliminating this or that type of damage.

And so when we're trying to cover all the bases, we have to incorporate that into, you know, how we're doing. So, and so, yeah, so it is it is really complicated.

And it's not surprising to me that our first study of only, you know, roughly done about as well as we could do in the past, however, it does provide a great deal of encouragement that we're moving in the right direction.

So then if we talk about humans, first of all, as you say, humans are not, you know, raised in captivity, every human is different in terms of their behavior of, you know, how they how they what they eat.

Well, what they are exposed to. And of course, their genetic where you at the most where you think have the the genetic with all the same everything about it.

Right. So yeah. So there will be a whole bunch of differences there. And that, of course, is why medics in general run away very fast. When you talk about doing multiple things at the same time, they want to keep things simple so that they can understand what's going on.

And, you know, adapt and optimize treatments in response to what's going on. But the fact is, you know, medics are going to have to bite that bullet because we are going to have a divide and conquer approach and a combination, an approach.

It's the only way that's going to work. The good news is the damage repair is probably going to be a bit more predictable than from pharmaceutical pharmaceuticals.

You know, you're messing around with with this very, very complicated network of processes that keep us alive from one day to the next. And, when you're repairing damage, you're not really doing that.

What you're doing instead is you're targeting stuff that is, if you like, not really participating in metabolism. It's just silently accumulating. And it only starts to be problematic when there's more of it than what the body is set up to tolerate.

And, so, so, so we may be able it might be easier than it looks, but I'm focusing even though I'm even though I'm still focusing on mice right now. Nevertheless, I'm also very much working with the rest of the community who are focused on humans, not just the medics, but also the people who, looking at the, regulatory side of things, you know, the regulatory framework in the U. S and elsewhere is really not fit for purpose when it comes to all of this.

You know, it's been designed to, you know, to, to work with the blockbuster drug drug model. It just doesn't know how to deal properly with cell therapies and gene therapies, let alone combination things.

So there's got to be a lot of modernization, you know, and of course, the, groups trying to develop new joysticks and then, you know, especially economic zones in the rest of the world to try to sideline, to do an end run around that.

But at the end of the day, you know, the established jurisdictions have got to get it right as well. Then just the economics as well, you know, I mean, for the longest time, economists working in Atwood would be saying, you know, terribly wishy washy things about how you, I think would be quite a good idea if we didn't have the aging, finally, one economist, one courageous guy, Andrew Scott from the UK, has been writing some very concrete things about the magnitude of the the odds that we would get this thing called the longevity dividend.

And and that's great. But even Andrew is not quite courageous enough to be talking properly about longevity escape velocity. It's talking about rejuvenation, but he's talking about it in an overly pessimistic way.

Because I think he's a bit scared, to be honest, of, of how dramatic the real result would be. Yeah, I, I thank you for bringing that up. I mean, and that is something obviously, you know, what was it, 2021?

And Sinclair's team was involved with this particular study or hypothesis of where it was kind of termed the longevity economy. And it's still around that conversation of compressing the morbidity window.

So if we can extend healthspan even by one year, projected revenue that it can put back in. So if we just look at the U. S. economy, you know, our, our, our gross national, debt, like what goes towards health care every year is about.

Well, it's it's 3.8 trillion. And yet so it's 20% of the gross national product. But what happens is to just to pay for sick care. But if we could extend health span by one year, it was projected, hypothesized that we could actually infuse over 3.8 trillion in to not drain on the economy, but into the economy.

So yeah, actually it was better than that because it wasn't even in the context of compressing morbidity. This was only delaying morbidity. But having people who get fixed dissect for the same amount of time as they do now, if they're doing so chronologically one year later, right?

Yes, exactly. 100%. And so the idea of what could happen if. Right. And then they extrapolated that out over a decade worth. So if we could actually get a whole decade, like the amount of money that can come in and be re, you know, what could life look like when all of a sudden we're not constantly fighting against slack and debt, but we actually have an infusion, an infusion of more money, more growth, more creativity, more, you know, new, new just all the things that could happen in society.

And to me, it's so fascinating that not enough people talk about that. Right? Like, because that that's where things get really mind expanding. And I believe for you, I want to ask I want to make sure with the time we have left, I want to hit on two things, but let's start here for a moment so you understand the potential.

You understand longevity, escape velocity. And so I want you to take us to the place in your mind. Just your opinion, right? Not what's in the lab. I want to know what it really could look like in a world where we hit longevity escape velocity, when all of a sudden we hit this, these mile markers first, we are increasing healthspan, and we are infusing more money into the economy.

And as we're improving healthspan or edging closer, we're getting that 20 year gain and all of a sudden we hit the longevity escape velocity like you're proposing within the next 10 to 12 years.

Human Translation, Regulation, and Economics

So then what does what does that mean? What does that look like? What does that like for humanity? So let me work backwards from the distant future. Well I for different I only really mean like 12 years from now.

30 years from now probably. At this point when these treatments are around, we have reached longevity escape velocity. We will simply have almost no biologically old people.

We will have the chronological age of the population will be gradually rising. Of course, it will end up. Yeah. More or less. Not much. Not much less than that.

But the way hardly any, any people who are biologically old and therefore there will be vastly less ill health in the world. That's actually not my focus right now, though, because by then the hard part will have been done.

You know, all the medicine will be there. Everyone will understand the economic benefits and everyone will, you know, be, sorting it out. But the, interesting part is what happens even a few years from now.

I think we've got a 5050 chance of getting to robust mass rejuvenation this 12 month delay in getting sick, in my life within the next three years or so, 3 or 4 years.

It could take longer. So pioneering research, but I think we've got a 5050 chance. Now, here's the thing. If that happens, when that happens and when experts start to say optimistic things and everyone starts listening, right, the consequence is going to be immediate, not for how old people actually are looking for therapies, what even exist yet.

Right. But for how long people think they're going to live. At the moment, virtually everybody in the world believes that they will live just a few years longer than their parents did.

And most of the world will move literally pretty much overnight to an expectation that they're probably going to still be around when these therapies do come along, even though they don't exist yet, and therefore they will be able to live indefinitely.

Well, it's certainly a very great deal longer than their parents did. Right. And that changes a lot of things about how they spend money. You know, they're going to want rather different life insurance and health insurance and, you know, pension plans and inheritance arrangements and everything.

And these are the big ticket items on which our whole global economy is constructed. So that means that it's going to be a complete fucking kind of, you know, it's going to be absolute mayhem.

It just just, just reorganizing everything. So when I am, lucky enough to give talks to, like, you know, pension funds or insurance companies or whatever, I always give talks with titles like anticipate the Anticipation.

I basically say, listen, guys, you've got to be ready when that instant change happens in public expectations, you've got to be ready to roll out the, you know, the products that they're going to want.

And, you know, they're all terribly courteous. And they always make me think, but, but but honestly, I go away feeling that the following day they're going to get up.

And it was all a bad dream, and they get on with life as if I'd never happened. Right. So it's it's a bit frustrating. I'm trying. I'm obviously trying my best to make as much noise as possible about this.

And yeah, get people to be a little bit more ready, for, for this fucking, you know, thing that's going to happen. But that's when the turbulence is going to occur, not when the therapies arrive, but when the therapies become widely anticipated.

And that's going to be really soon. And that's why we do need to to have our voices amplified, because I say that I've had that exact same situation on so many occasions educating doctors.

So as a doc, I educate my fellow practitioners and I'm educating them on longevity medicines, regenerative medicines, the future of healthcare. And that it's not just a thought, it's not just some ancillary little niche marketing like this truly is a trajectory that is, it's overnight going to transform and they'll be engaged in the moment.

And yet the like so many people are still just in a model of living as business owners, as hospitals, as insurance. That is all of it. They're kind of like, okay, but right now this is what we have to do to take care of our patients, to make the money, to pay the you know, employees, to get to do the things that we do just to kind of get by today.

So I think that overall, to your point, many current constructs in business in society is so reactionary. They're just so in it, and they're the people that overnight will have will be expected to have a new solution.

And so yes, we will continue to just say, hey, it's coming, it's coming. So be that visionary, be that thinker. So I want to ask you kind of rapid fire, let's let's close this out.

So first for the consumer, with the different things out there okay. So kind of the fairly easy it is coming. There are some things that we can do already to rejuvenate the system.

We already know it. So would you say if you had to pick one is it's analytics. Is it seismic. Is it focusing on thymic rejuvenation. Is it mitochondrial efficiency in health.

Is it looking at these regenerative you know like whether it be stem cells or exosomes. We want to look at a regenerative molecule. What would you say is the place if you only had one place to focus right now to really help boost their system and to amplify healthspan, where should they focus?

So, of course, I always shy away from picking one thing because this is a divide and conquer approach. But if I had to choose one that is showing really strong promise in the clinic now in people, not just in mice, I would have to say that, the best one is thymic regeneration, restoration of the immune system.

It seems like something that is possible to do with existing technology. And the, the impact seems to be quite strong. And so it should be, because the immune system pervades everything.

Right. And if we really are restoring the, you know, the particle analogy of the naive T-cell population, which is what thymic regeneration does, then, you know, that really ought to matter a lot.

So I would say it's there. Of course, you know, all the other things you just mentioned are coming. But I'm not quite ready for prime time. You know, I think latex, you know, people, this is a huge research area, and there are improvements being made all the time.

You know, we have a fantastic in our current study, if we were starting our current study today, we'd use a different one. You know, progress is being made rapidly.

But yeah, I think, you know, it's going to be a couple more years before that's really there. Similarly for partial reprograming, you know, for, for, stem cell treatments, I mean, stem cell treatments, of course, being made available across the world in various clinics, especially in offshore jurisdictions.

And, you know, lots of people are reporting good results, but it's too uncontrolled. There's not enough follow up. So we really don't know. Yeah. And I think that is one of the challenges.

You know, there are so many promising molecules that yeah it's understanding kind of the science and the art. So these things aren't just a one and done.

A lot of these are used in a very intelligent design. They're meant to be cycled. It's not all or none. And and I think that even as, as clinicians and in health care, we haven't been given the grace to remember that.

Like, not everything is just put them on it and keep them on it. It's like, not it's not hard starts and stops. So we are being called into an error of understanding.

There's complexity and there is a multimodal approach. And and I love that you're leading the way. You know, within your foundation to, to really vet that out in the studies that you're doing.

I think that's very landmark and how you're doing it. So I want to commend you. And the last thing I want to ask you, as we get ready to close out, since you are already out there having these incredibly important conversations, anticipate the anticipated.

Like, that's such a phenomenal title. What advice if any, would you give to these leaders in finance, to these leaders in these these business, in health care that are in the seats where in five years things are going to shift almost overnight and they need to be ready.

What is something you would encourage them to be considering right now, to help them be ready and to to be able

to show up with solutions and play well.

Really, I don't need to go beyond what I've said. The people that you're talking about that already know how to do the math. They know how to take, you know, projections and turn them into, arguments for products, you know, that like optimizing what kind of project a product, ranges they're going to want to do.

The problem is, where do they get their projections from? And, you know, insurance companies, they, they, they constantly have these huge bets they're making on the future.

And then there's a huge sunk cost thing changing their mind about what they think the future is going to do is they're really reluctant to do that.

Anticipating the Social and Financial Shift

And they pay these actuaries to come up with projections. And the actuaries know which way, which side, that belly button. And so they'll just carry on saying the same thing and using, you know, trend lines that completely ignore the possibility of radical technological breakthroughs.

It's a disaster. So essentially all I would say in response to your question is these people need to ignore their actuaries. They need to actually listen to the people who are talking about the likely timeframes for radical technological breakthroughs that will completely, depart from the trend line.

So to everybody listening, it's coming. The it's no longer just can we we are and we will we are able we will have the complete access to regenerative, solutions that will allow this human body to be here as long as we really want to now, it'll always be our choice.

Will we will we utilize these technologies? Will we engage with them or will we not? So yes, there's still there's still personal choice. Of course. Yeah.

I think this is a beautiful time to begin to reimagine what is possible for each of us as individuals, as business leaders, as you know, political leaders, like so many from from the individual out to the collective, what can become possible.

So as we round out today's conversation, this is just the beginning, you guys. Rad. Cass, we're going to we're going to keep pushing the envelope. We're going to have week over week these explorations into let's start to think bigger, not the slow drip of what we refer to as, you know, A1X2X like as if time is linear.

We are about to see in a moment that time in our access to it will literally take a quantum leap. And it will it will amplify as if overnight ten x 20 x 100 x.

When we start to really understand longevity, escape velocity. So living life at a full list is our birthright. Death can become a thing of the past. It can become completely optional with the future of longevity and regenerative medicines.

Doctor Aubrey de gray. Any final parting words or things that you want, the listeners to know about you, your work, and, just how to keep thinking bigger, to live better today for longer, more vital.

Tomorrow's. Ultimately my final word. This once one realizes that something is going to happen in the future. And that thing is a very good thing. When one is able to shift from a mindset of not wanting to get one's hopes up, you know, and therefore essentially pretending it's never going to happen into a mindset of wanting it to happen as soon as possible for oneself and for everybody else.

And so then we are talking about, you know, every single person looking at themselves and asking, what can I do? You know. Support the work financially.

Support the work scientifically. Support the work in terms of education like you're doing right now, interviewing me, you know, support the work in terms of advocacy, lobbying and government and so on and so forth.

You know, everybody's got their own position that they can leverage to make a difference. And if we remember the time, the scale of the problem, you know, it becomes quite easy to be motivated by it.

Every single day. Worldwide, we have 110 more thousand people dying of aging, and of course, mostly dying after a long period of ill health and suffering and the quality of life.

So, you know, that basically means that every second that you can bring forward the defeat of aging. Yes. I think a life quite a big deal. Right. It's quite easy to get back for that.

So yeah, I mean, that's what gets me going. It is quite easy to get out of bed for that. Now think about this gang. So as we get ready to wrap. Oh my gosh, doctor Aubrey de Gray, what an incredible conversation.

What an honor to share this time with you today. And and thank you for bringing both the research to the science. And then, you know, you just gave something that you've sprinkled inspiration throughout all of this, which I love.

I appreciate that you've done this today through your unique lens and view. Because, you know, we get to participate, we get to be active, have co-creative participants get engaged, whether it's in your own body, in health, whether it's in the research following learning, conversing, being part, follow this podcast, come out to to Rad Fest and Longevity Escape Velocity Foundation events and, you know, get engaged because this is not going away.

It's only getting louder, it's only getting better, and you can be in the forefront within your own body, your own health, your own business, your own community, your own life.

So, wow, I'm just going to sit here and bask in the inspiration of this incredible future that we get to, share and together again, doctor Aubrey, great.

Thank you so much. It's been an honor and a pleasure as always. Well thank you. Yes. And we'll have links in the show notes of how to follow Doctor Aubrey de gray and all of his research and his work, so that you can stay in the know again, make sure that you like subscribe.

Share this episode of Rad Cast with many more to come. Where week after week, together we explore the science and the soul of super longevity. Because we're not here just to live better today, we are here to radically extend the possibility and the potential of what it means to be human for generations to come.

I'm Doctor Melissa, Girl Peterson, thanks so much. We well, thank you for joining us on Rad Past where science and soul ignite the future of radical life extension.

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