

## The Immortalists Transcript

Aubrey [00:00:27.03]: Humanity has lived with aging since the dawn of civilization. All of the legends and fables and stories that have been written about the hypothetical elimination of aging call the whole thing "immortality".

Aubrey [00:00:49.06]: A lot of people have asked me whether my quest to defeat aging is in any way personal, whether I'm doing it in order to benefit myself, or my wife, or my mother for that matter. I've never really thought about it that way at all I've always thought about it purely in humanitarian terms.

Bill [00:01:15.03] :when we cure aging, it's gonna be hailed as one of the most successful periods of time in human history.

Bill Andrews [00:01:35.10] I have no idea what my life is gonna be like, but I know that when I become a million years old, I know that I'm gonna say "today is not the day I wanna die."

Aubrey [00:01:48.10]: we're interested not in slowing aging down, but in actually reversing it, turning back the biological clock. The future that we're talking about here, this is not science fiction.

Radio DJ [00:02:15.21] I don't make a habit of reading Popular Science or anything like that but when I was doin research on wanting to live longer and feel longer, I kinda stumbled across it. Bill Andrews is his name but his mission is simple, to extend the human lifespan or die trying. So far so good, he's actually running an ultra-marathon right now, and he's running 50 miles today. Bill is the finish line a padded room?

Bill [00:02:42.22] Yeah, there's a lot of crazy people that do this kinda stuff.

Radio DJ [00:02:47.05] I'm sorry for slowing your pace down but I appreciate you doing this. Out of all the things that I've researched personally, I find this one the most intriguing, the most real, could you please tell me how this is gonna save my life?

Bill [00:03:06.20] When I was a little kid, my father said "Bill, since you're so interested in science, when you grow up why don't you become a doctor and cure aging?" I thought, wow what a great idea, you know I've been obsessed with it ever since.

Bill's father [00:03:32.28] Life is so funny because it really you get, you get to learn and learn and learn and just about the time you learned what you wanted to learn, you die.

Bill [00:03:46.23] Is the same race? ok so here's you're running in the race, so remember this picture here? Do you remember where we did that and what we were doing that for? You forgot what it was?

Bill's father [00:03:58.11]: yeah it was the the top thing it was the..

Bill [00:04:00.24]: no that's actually in Reno. Yeah that's a great picture of us, you and me.

Bill [00:04:13.25] But the future is horrible, we're all gonna suffer from terrible ailments related to aging um, my father here is somebody that I've seen change a lot just in the last few years because of aging.

Bill's father [00:04:28.19] My dad is a sc..doctor. but he's more of a scientist and the lot of the most of the people out there who are in meadows are really doctors, there aren't that many that are scientists and there is a difference between them and to be the c..cl..clue..get the right thing done, you need to be both, and uh I'm pretty proud of my dad

Bill [00:04:55.04] You mean your son.

Bill's father [00:04:58.06] (laughs) my son...can't tell one from another.

Bill [00:05:15.09] I positively believe that we are gonna find something soon enough to allow my 84 year old father to see his own aging reversed.

Bill [00:05:41.26] knowing that curing aging is something that a lot of people think's impossible makes me want to do it all that much more. 2011 should go down in history as a very important year cuz it's the very first year that humans have ever been able to reverse aging in any type of animal on the planet. A research lab at Harvard has actually been able to reverse aging in mice, and these mice actually became younger using telomere lengthening technology. So what is a telomere? A human being is made up of 100 trillion cells and then inside of each of these cells are found chromosomes. A chromosome is like a long shoelace. At the very tips of our shoelaces are found the caps, those are the telomeres. When the caps of the shoelaces get worn away to nothing, the shoelace falls apart. Well same thing happens with the chromosomes. Telomeres shorten every time a cell divides. And so when a telomere gets shorter it's almost like a clock ticking. A cell divides it ticks once, a cell divides it ticks again, it ticks again it ticks again, and as a result, human cells know how old they are. There's two words, telomere and telomerase. Telomerase is the enzyme that lengthens the telomere. When a telomere gets shorter, the clock ticks once, telomerase pushes it back. Ticks again, telomerase pushes it back. Similar to what Harvard did with the mice, we're trying to figure out a way to turn on telomerase in all of our cells. So we've been screening hundreds of thousands of synthetic chemicals looking for anything that would turn the telomerase gene on, then the human cell would then become immortal. Lots of people told us we were completely wasting our time, but we found our very first hit on the 57,684th chemical we screened. 10-15 years in the future it'll be a prescription that that doctors can prescribe to just about anybody. My main reason for doing this research is to extend my own lifespan, my friends' and family's lifespan, and we are so close.

Aubrey de Grey [00:09:48.08] The value (?) is the fundamental reason that we're all meeting today to actually discuss technical details of what experiments might be most expedient to do to determine really what our emphasis should be.

William Bains [00:10:01.13] So I met Aubrey who nobody else seemed to have heard of. we started out having a discussion on gene therapy and as the pint passed he talked more monogetically and faster and faster and my notepad just got pummeled with scribbles. I was trying to keep up with the drinking and the science and I realized when I got back home that my writing had become incomprehensible. But he still seemed to remember it all, it's it's..quite an extraordinary talent to be able to drink that much and still have coherent scientific thoughts.

Aubrey [00:10:39.04] A lot of people wonder how someone gets to be so passionate about defeating aging and i came to that realization in a rather curious way. It was

because my mother wanted me to play the piano. And I didn't think much of that, the best possible outcome of spending all this time tapping away on this instrument was that I would become a good pianist, and what the hell use was that you know there are lots of other good pianists already. I wanted to be a scientist. To do things with my life that would make a difference for humanity.

Cordelia [00:11:20.29] He was so sweet, he's a wonderful, amazing son. This is, that's me. I think it's great to live forever! I'm just about to start my life, I mean I'm only 71 and a half.

Aubrey [00:11:38.26] 81 and a half. 81 and a half.

Cordelia [00:11:41.26] Oh 81 and a half! I can never remember that! It's very unbelievable, I just don't believe it myself. I'm 81 and a half.

William Bains [00:11:51.05] Although I think some of what he suggests is uh, outlandish even, there's a lot in there that is potentially doable. And it's addressing something as huge as the reason we age and the reason our abilities decline, our faculties fade away and then we die. If you can do something about that, I mean how can you not do something about it?

Aubrey [00:12:19.12] In the developing world the proportion that die of age related problems is actually something like 90%. It's absolutely clear that it's the world's most important problem. Even if I bring forward the defeat of aging by just one day, you know that's 100,000 lives that I've saved. I mean that's 30 world trade centers for Christ sake. It's just astronomical.

Aubrey [00:13:13.11] I'm certainly not inclined to get sick. I do not want to get Alzheimer's disease or cancer or any of the things that afflict people when they have the misfortune to have been born a long time ago. So I do not want to end up in a place like this. The concept that I developed is all about the application of regenerative medicine to the problems of aging. Aging is a process that happens naturally in the body. It's all about damage, molecular and cellular damage that accumulates in the body over time and eventually kills them through the creation of various diseases. Molecular garbage really, in the cell. What we want to do is fix the problem by introducing new enzymes that the human body doesn't have that are found in other species and that can break down these substances we can't break down. It's really just the same as the concept of keeping your house reasonably free of garbage. You have to take garbage out of your house once a week or so. If you take a month then the house doesn't work as well as it used to. And that's just the same in the human body. Graveyards are somewhat paradoxical. They accumulate only certain components of decomposed human bodies but not molecules that accumulate throughout life and eventually cause some of the most important disease of old age such as cardiovascular disease and macular degeneration. The fact that they don't accumulate in graveyards means that something in the soil is breaking them down even though nothing in the human body can break them down. So in principal we might be able to identify the bacteria which are able to break these things down, and then we might be able to identify the genes and enzymes that they use. Once we get to a point of sufficient comprehensiveness of the maintenance where we are really truly repairing things as fast as they go wrong, game over. We will have the ability to live indefinitely.

Randy [00:16:21.26] Hey Bill

Bill [00:16:23.20] there i am right there

Randy [00:16:26.14] That's a dramatic shot there

Randy [00:16:30.21] I first met bill Andrews when we were going to high school together, uh we both went to a boarding school.

Bill [00:16:40.19] I tended to have friends in high school and we liked to talk about things like living forever and finding life on other planets. When Randy and I re-met each other at a class reunion we hired him here. I see his picture here and all of a sudden I recognize him as that brat that I couldn't stand (laugh)

Randy [00:17:03.24] Well I don't know about brat. You can see I was in front of the other three, so I was already showing signs of leadership potential

Bill [00:17:10.20] But I you know there was a lot of people that thought I was kind of a brat too so who am I to say

Randy [00:17:18.20] I was talking to Slater the other night, he said there's no point in going to the reunion anymore because now we've already heard all the stories

Bill [00:17:25.06] Yeah, I was gonna say..I go to see what everybody looks like now.

Randy [00:17:31.03] how's their aging doing?

Bill [00:17:33.16] Randy completely understands me. He sees everything that's going on so it's nice to have a friend like that.

Randy[00:17:46.17] It dawned on me, this is the best job I've ever had. IT's ironic and I appreciate irony, but but the joke's on me. To finally have all this unfold before me to where my life could really make a difference for humanity. And I'm part of something wonderful and now all of a sudden I'm hit with cancer and maybe I've got 2 years left to live. What we have here all these white areas are cancer cells.

Randy [00:18:41.10] What am i gonna make of my life, now that it's a lot shorter than I was hoping. I you know I don't know. Yeah Randy, August '57, yeah this is before I knew what was really going on. Your reward for not being stupid and getting yourself killed when your young is to be slowly tortured to death and it's just not right. So we're gonna fix that, Bill and I. I just want to cure or I want to die trying. I don't know where I got that idea.

Bill Andrews [00:19:31.02] Randy dropped everything in his life to focus on this and now I've gotta come through for him.

Bill Andrews [00:19:43.16] Curing aging is a race. This is the biggest race of all time. I have a pretty incredible girlfriend. She and I travel all over the world doing races together. She's in her 50's.

Molly [00:20:07.11] I actually didn't start running until I was 48 years old, I didn't know anything about running, I just was out there all by myself just training and um I got a stress fracture. So when I went to the doctor, the doctor said "you are too old to be running a marathon." And I was like horrified, at 48 that's not old. When I crossed the finish line I sent him a picture of me and said don't tell people that hthey can't run and that they can't exercise.

Bill Andrews[00:20:41.22] She actually just became the first American woman to complete a race in the Himalayas and she ran for 58 hours straight hours to complete that race.

Molly [00:20:53.18] So it's the only road that's open two months out of the year. Bill and I, we attempted it in 2010. Nobody had ever attempted it. So the race starts, we're high tailin it up the mountain, later in the race I had heard that Bill took a pit

stop you know he wasn't feeling great, so the whole day I am looking behind me going "where is Bill?" The race director shows up and says "Bill is at the hospital, we have to fly him out," so at that point I, I abandoned the race. He was in terrible shape, it played in my head about how bad it could get but you know, I I can't even go there, I really can't, it just would be horrible.

Molly [00:22:01.18] You're gonna like the present.

Molly [00:22:04.01] I have to explain it first. OK, I purchased the naming rights of a star, the name of the star is called "Telomere Love"

Bill [00:22:14.01] Wow

Bill [00:22:18.19] When I got into my early 20s I found myself getting engaged five times. In every single case it took me a day or two of depressed, I'd say oh no this isn't part of my my overall plan, this is going to interfere with my plan, it's not going to make things happen. In all cases I went and and canceled the engagement.

Bill [00:22:40.16] I got, I got you a present.

Molly [00:22:44.02] you got me a present?

Bill [00:22:47.03] I've gone 39 years without ever proposing to anybody until just uh, last August. I uh proposed to to Molly and so, so we're engaged now and I'm shocked cuz I 2 days later I didn't cancel it.

Molly [00:23:03.01] It's a heart but what is that?

Bill [00:23:05.17] you don't recognize it?

Molly [00:23:07.04] Is that petrified wood? Thank you, you did really good. Thanks, that's so sweet!

Molly [00:23:15.20] We have our whole life plan, after everything is secured, we're gonna race the planet, I guess we're going to the moon according to Bill because he's got a race up there that's he's worked on. (He's adorable.) It cracks me up, because that's Bill. I just go okay, go for it baby.

Aubrey de Grey [00:23:49.16] People often ask me you know why have I got this beard, why do I look so weird, first of all I don't think it looks particularly weird, i think it looks fine, but the main thing is my wife thinks it looks fine, my wife is a beard fan. SO here's the really interesting thing about my wife Adelaide, she's 19 years older than me, so when we met she was 45 I was 26. A nuber of documentary makers have tried to promote the concept that actually I'm in this in order to save her life or something like that. That's complete nonsense. So my wife's a biologist, she's a geneticist.

Adelaide [00:24:34.09] I originally came to the United Kingdom on sabbatical, I was a full professor at the University of California San Diego. My claim to international fame is a breakthrough that I did as a post-op. And what I discovered was a very small particle that give rise to eggs in sperm. This is unusual for someone to make their most major discovery that early. I'm a pure biologist. I ask how nature does things and Aubrey is an engineer. He uses nature to build things. We feed off each other simply because we have such different expertises.

Aubrey [00:25:57.22] Woah! that's the one I would call move conservation, are you sure you want to do that?

Adelaide [00:26:02.02] Um no, but I did.

Aubrey [00:26:11.28] It's really a very fruitful scientific relationship that we have quite apart from the nonscientific aspect of our relationship

Adelaide [00:26:28.03] My very first interaction with Aubrey was in a very crowded room at a party, and he noticed that I was someone that he hadn't, didn't know, and said hi, justify your existence. So while I was dithering as to how I was going to ask that question, eh went away. The next time we interacted was during a free form dancing which I enjoy enormously. And shortly after that we were dancing as a couple and we actually began to interact as people. So I never did have to justify my existence to Aubrey, fortunately.

Aubrey [00:27:44.07] It sometimes escapes the general public that scientists are actually human beings or enjoy having a good time as well and especially as having a good time with each other.

Aubrey [00:28:05.19] The fact is that we've been together 22 years already and we seem to be enjoying it, there's no reason why it should end. Actions speak louder than words really, you know the fact is you know no couple stays together as we've been together without something really quite fundamental being right.

Terry [00:29:27.25] Alright, nice to see you. What do you know Bill?

Terry [00:29:31.01] It's very exciting having two of the most prominent longevity researchers coming into my clinic for evaluations. My name is Terry Grossman, I'm an anti-aging physician, and the reason people come to this clinic is because they don't ever want to die. SO what's your family history like?

Aubrey [00:30:01.08] Uh well actually there's not much I can tell you about that because my family is so um small. I don't have any brothers and sisters or kids, and my father left my mother before I was born, nothing about him, yeah so basically a pretty healthy family.

Terry [00:30:15.07] when did you first find that you had plaque in your arteries?

Bill [00:30:20.12] I wanna say uh..probably 25 years ago.

Terry [00:30:24.13] So you were only 35?

Bill [00:30:26.24] Yeah.

Terry [00:30:27.22] That's pretty young for plaque in your arteries.

Terry [00:30:32.16] We've been increasing our life expectancy steadily. So right now you live for a year, we're adding 2 1/2 months, you live for a year we're adding 2 1/2 months, eventually they're going to touch. But how about the point where that we, you live for a day we add a day, you live for a day we add a day, you live for a day we add a day, at that point the horizon just keeps moving and in effect um particularly when we solve the telomere problem, we've in effect achieved human immortality. We could live long enough to live forever by passing over three bridges. Bridge one essentially is the medicine of today. The medical and lifestyle therapies are available to keep us as healthy as possible. Things like diet, and exercise, and stress management. Bridge 1 will take us to bridge 2 which largely is the biotechnology revolution. In our clinic we're using stem cells that are found in belly fat. Because those are the only cells in the body that actually have the capacity to repair. And this will occur over the next couple of decades and take us to the mid 20-30's at which time bridge 3, the nanotech revolution will take hold. The hallmark of the nanotech revolution will be the advent of devices such as nanobots. The nanobots will detect problems and repair them. We're talking about life expectancies measured in centuries.

Machine [00:32:26.04] Hi, welcome to the H scan test. This test will measure how fast you can react to a sound.

Bill [00:32:37.14] Aubrey just came running into the room, he's just finished this test called the H scan that gives you your biological age and he says guess what my biological age is, I said 38? He says 29. He says, "I beat you!"

Aubrey [00:32:51.07] Oh I totally trumped Bill. First of all obviously I won because I'm younger, but the thing is I won by a larger number of years than he won by, he only beat his actual age by about 19 years and I beat mine by 20 years.

Bill [00:33:01.29] I didn't really realize it was a competition until just now, uh, I am I love competitions.

Terry [00:33:19.02] 'Til we solve the problem of the finite length of our telomeres we will not be able to live forever. There are some types of cells that have solved this problem and interestingly they're cancer cells. The cancer cells are immortal, and that's one of the biggest problems with cancer.

Machine [00:33:41.22] Take a breath in and hold it.

Bill [00:34:01.15] 85 to 95 percent of all cancers produce telomerase. That has led a lot of people to believe that telomerase is the cause of cancer. But it's not. The most direct thing that causes cancer is mutations. So the key is to prevent these mutations from occurring, but one of the biggest causes of these mutations is short telomeres.

Aubrey [00:34:30.14] Telomerase in human beings is expressed at very low levels, only just enough to allow cells to get along for a lifetime. But cancers express high levels of telomerase, most of the time, about 90% of cancers express really high level.

Bill [00:34:44.28] look at this, low level of oxidated stress.

Aubrey [00:34:47.14] Ok and what was mine again

Nurse [00:34:48.17] 232 I believe it was

Aubrey [00:34:49.27] Better than normal

Bill [00:34:51.10] Wow, I'm getting slaughtered here

Aubrey [00:34:54.10] you're just doing too much running, that's what it is.

Bill [00:34:56.11] What Aubrey wants to do is destroy the telomerase gene in all of our cells and our body. And that would then decrease our chances of getting cancer.

Aubrey [00:35:06.28] my approach is to actually use telomere shortening as an anti-cancer mechanism. It's called WILT, that stands for Whole Body Interdiction of Lengthening of Telomeres if you really want to know.

Bill [00:35:18.21] I conceded that uh Aubrey beat me on the H scan test but then I said to him, but let's see you do as well as I did when you're 60 years old. And he just looks at me and says "I'm going to do better."

Aubrey [00:35:32.06] I just see this reflection off the ceiling I don't know it's just hard to see them, Ok and the next one..oh god almighty.

Bill [00:35:43.01] So really, telomerase does not cause cancer, cancer causes telomerase. But if telomerase makes a cell healthier, it's gonna make a cancer cell healthier too.

Aubrey [00:35:59.18] At this point, we don't know which of these approaches is actually gonna be more promising in the long run.

Bill [00:36:05.14] And if it turns out that telomerase is a bad thing, that's really bad news for us because there's no way that we're ever gonna be able to cure aging unless we can figure out a way to prevent telomeres from shortening.

Bill [00:36:18.27] The push ups are gonna be tough, but I hear it's tough for him too so hopefully I can get a few points in for the push ups.

Bill [00:36:38.07] I'm jealous of Aubrey's scores, he's doing a lot of different things that I'm not doing so I guess I gotta go find out more about what he's doing um, maybe I should start drinking beer, that's probably the secret.

Leonard [00:37:17.22] My name is Leonard Hayflick, I'm the father and in some cases the grandfather of a lot of the workers in the field of cell biology of aging. I do respect Aubrey, I respect his enthusiasm, his intelligence, but when I hear people claim to have found an intervention in the aging process, it's tantamount to a claim that someone has reversed gravity, or has found a way of turning the sun off. I entered the field at a time when to admit that you were working in the field of biology of aging to other scientists, essentially meant professional suicide. Because the field was considered to be a field of black magic and pseudo science and as a consequence of that to make an admission that you were working in that field tainted you immediately. In the late 1950's I made a discovery that torpedoed a belief, a dogma actually, that was held by cell biologists since 1900, which said that when cells are put into culture, they will continue to divide forever. We discovered however, that normal human cells have a limited capacity to divide.

Bill [00:39:35.26] When you take human cells from an old person and let them grow in a petri dish, they'll only divide about ten times before they stop dividing. When you take cells from a newborn baby you'll find that they divide more than 50 times. This became known as the Hayflick Limit. So what Sierra Sciences is trying to do is figure out a way to control the length of our telomeres, obliterate the Hayflick limit.

Leonard [00:40:14.04] Dr. Andrews fails to recognize that we have no specific evidence that the expression of telomerase is the cause of any process of aging. Association does not prove causation. This painting by Lucas Cranach painted in the 15th century, it depicts a fountain of youth in the center, and as the ladies swim toward the other side, they emerge as young women. This idea the fountain of youth now exists in modern times in the form of pills or expression of telomerase, so it's a continuation of this, this uh apparent hope by people that they can do something or tamper with the aging process. Periodically, there arrives someone who has the answer to aging. Dr. Andrews, is simply a more recent iteration of similar personalities in the past. Most of the people have a financial motivation.

Woman at Conference [00:41:41.26] yeah, want to take a sample with you? It's pretty exciting stuff. The y is omega 3 and these are the samples that we tested

Bill [00:41:48.23] I mean quacks and charlatans have done a tremendously good job of discrediting the entire field of anti aging for thousands of years.

Woman 2 at Conference [00:41:58.14] It's very mutli-dimensional, and one of its uses traditionally is as an aphrodisiac.

Bill [00:42:09.20] So now, when we come along and say we have a cure for aging, I'm not surprised that people don't believe us. Hundreds of years from now, we're gonna look back and be shocked about this horrible world that we all used to live in where people used to get old and die.



Leonard [00:42:46.03] My mother was a beautiful young woman, as many of you know having seen her pictures as a young lady. The odds of living to 106 are about one in a quarter million. My mother beat those enormous odds, so if a long life is to be a desirable goal, then Edna has actually achieved that goal. People might believe me to be rather hard-hearted to be conducting this interview 48 hours after my mother's death, but I'm have no feeling of grief for very important reasons. My mother actually left us many months ago, when her cognitive decline began. I do not mourn the passing of my mother, I simply celebrate her life.

Bill [00:44:38.11] Our company's 13 years old now, and we lost our funding when my present investors uh suffered from the economic crisis and became unable to fund the research anymore.

Randy [00:45:06.12] We may have a lifespan left measured in months. If Sierra Sciences closes, who knows when it might when somebody might take up the uh the crusade again. It would be a tragedy. Someday soon we could have a drug that would reverse aging. And, I won't be around to enjoy that if I don't survive this.

Bill [00:45:45.25] We've had to cut back in research and I can't pulling a rabbit out of my hat. What is our time frame now, is there any chance we're gonna get this signed today? We have days that nothing happens, and we have day that we're worried that I'm gonna suddenly find out that the company's been sold out from under me

Woman on telephone [00:46:08.10] As an investor and an owner in the company, when will the company start generating revenue?

Bill [00:46:12.26] so there's two different kind of bullets in this gun, one kind of bullet is where the company gets sold out from under me, and then another kind of bullet is where nothing happens.

Woman on telephone [00:46:22.07] I'm prepared to sign a check for 2 million but not 4 million. Bill can you or another on your team please clarify that?

Bill [00:46:28.11] Everyday I have to spin that wheel and put it up to my head and pull the trigger and so far every day I dodge another bullet

Woman on telephone [00:46:39.15] We'll be making our decision over the weekend

Bill [00:46:46.10] We believe that we can make a human cell immortal. In one year, after we find the funding that we need to do this research, so we're that close..

Bill [00:46:55.17] I've learned that I'm really good at speaking on stage. People believe me because I'm really sincere about what I say. If I stand on stage and I'm lying and I say something that's not true like endorsing a product that I don't really believe in, people know it. I'm not a good liar.

Bill [00:47:12.14] live longer and live healthier now, and it's all true

announcer at conference [00:47:15.25] we'll uh talk to Bill at the break and let's thank Bill for a fabulous talk.

John [00:47:40.12] Phenomenal, that's actually the strongest inducer of telomerase now in existence.

Bill [00:47:51.11] I got a call from John Anderson. we just thought ok yeah, we better do this because we don't have any other sources of revenue coming. And we ended up finding several different natural products, these are plant extracts that would turn on the telomerase gene, those ended up being put together into something called product B.

John [00:48:17.13] We've undertaken a vast project, looking for telomerase inducers. And we're continuing to search the world to find that silver bullet. This that has some of the new hit, telomere supported ingredient, this is history. But bill, I want to present you your very first bottle.

Bill [00:48:41.29] oh thank you, thank you. I'm gonna send this to my father.

Bill [00:48:51.15] This exceeded my expectations, there's so much equipment in here.

John [00:48:59.13] My personal interest is first of all, i would like to live a healthier and longer life. And also I would like that for my animals as well. So I'm ready to go, why don't we go out and feed the giraffes. One of our giraffes actually came from uh, Neverland, the Michael Jackson ranch. All of my animals are on the telomere products.

Hi babies! Hi there! Guess what I've got for you! Givin her a bit of telomere support. Are you gonna give me a kiss? Oh, okay, good girl! good girl! I taught her to kiss 9 years ago, I've raised her since she was a little baby. How you doin baby? Yeah, I'm like your little daddy you know. You wanna give me a kiss?

The possibilities are unbelievable in telomere research and what that means you know for mankind in the future.

Bill [00:50:17.25] I would do just about anything if somebody offers me the amount of money that I would need to continue my research into trying to find a cure for aging cuz that's my mission in life.

John [00:50:29.20] And, I'll tell you in hindsight it's the best thing I ever did, thi sis the next generation that's gonna change the world.

Bill [00:50:38.22] yeah I know, absolutely.

John [00:50:40.05] Thank you Bill, we make a great team.

Announcer [00:50:58.12] And Dr. Aubrey de Grey, then for the next 16 minutes, Dr. Aubrey de Grey will seek four of the motions, followed by professor Colin Blakemore against the motion.

Aubrey [00:51:18.02] I do take this debate very serious. I think the overall strength of arguments will have significant influence on thinking in powerful influential circles in the UK especially on this matter for years to come, so this could be quite a watershed event

Dr. Blakemore [00:51:42.14] I find Aubrey's position quite difficult to pin down. The fact that he founded the Methuselah Foundation implies that he would really like people to live for a very very long time. And back in 2004 he made this now famous statement that the first person to live to 1,000 was already alive and was probably in their 60's. I think that's just foolish. Well I suppose that he might criticize me for being old fashioned in my views, but he's never actually worked at the bench. And that I think explains a lot of what I have to say is the naivety of his opinions.

Aubrey [00:52:30.25] It remains to be seen who's going to be the more persuasive. I give an awful lot of talks on this topic and Colin is relatively new to it though he thinks he knows what he thinks anyway, so we'll see

Aubrey [00:52:52.07] If you oppose this motion, in other words if you're thinking that you don't want to defeat aging entirely, then you must be holding one of two positions, either there is some age at which you think it is good for people to get

sick, or there is some age at which you think it is good for people to die even if they're perfectly healthy. They both sound pretty ageist, don't they? The only reason that we regard medicine for old people in a different way than medicine for young people to day is because of the fact that we don't have good medicine for old people today. That is not an argument for not developing that medicine. Many people when we talk about this question they say oh dear well we have too many people, what we have are dramatic decline in the death rate, people carrying on being born, far too many people, massive environmental problems, don't want to go there. Maybe, maybe we will, but maybe we won't. We know nothing about what the birth rate is going to be hundred years from now. We know nothing at all about other technologies that may reduce our carbon footprint and thereby increase the carrying capacity of the planet thereby eliminating the problem in another way. The scenario that we all should be avoiding is the scenario in which humanity of the future looks back and blames us for not developing medicines against aging and thereby for condemning them to an unnecessarily miserable old age and an unnecessarily early death just because we thought we were so clever about how the world was going to be and we thought that it was actually doing them a favor not to develop these medicines. I do not want to be blamed by our descendants and I don't think you do either. Thank you very much

Dr. Blakemore [00:54:37.01] At first blush, this burgeoning field of research seems both noble and profound but success in achieving the goal of immortality would be a disaster of apocalyptic proportions. The first and most obvious problem is that many things go wrong in old cells. The chance of getting Alzheimer's doubles every 5 years from the age of 65. More than 40% of people are over the age of 84 in the United States are said to have Alzheimer's. Aubrey I suppose would simply say well give me the money and we'll solve all of these problems in 20-25 years. I'm afraid that vastly underestimates how long it takes to develop safe new treatments even when the causes of disease are completely understood. What Aubrey de Grey is offering you is eternal life without pain. This is snake oil, and dangerous snake oil, and I urge you to vote against the motion.

Moderator [00:55:34.23] Now, could you please raise your arm very clearly if you want to vote in favor of this motion. Thank you and could you raise your arm very clearly if you wish to vote against this motion? Thank you very much. I think the motion is rejected by a majority assessed by me

Dr. Blakemore [00:56:17.11] What I really worry about is the possibility of a sudden break-through, because the social consequences of that I think just don't bare thinking about. We know we're on the brink of a crisis in so many areas, water supply, energy supply, food, conflicts that are generated by territorial disputes and so on, you know I think if you stand back from this question and make our decision not on the basis of our selfish interests, of course I'd like to live forever, that'd be great. But we have to detach ourselves from that and think about the bigger question of humanity as a whole.

Aubrey [00:56:56.15] So one of Blakemore's unbelievable arguments is that we shouldn't do this because there's a danger that we will postpone the age of the body without significantly or similarly postponing aging of the brain and then we'll just have an explosion of dementia in old age, now that of course makes every bit as

much sense as it would have done 30 or 50 years ago when we had made less progress against heart disease for example than we had now. Do we regret that we've made progress against heart disease despite more regresses? I'm personally sure he doesn't but I'm equally sure that he hasn't asked the question and that's what really annoys me.

Dr. Blakemore [00:58:05.14] The fact that Aubrey's research institute and headquarters are in California I think actually says a lot. There does seem to be this um dare I say it rather kind of flaky Californian expectation about health and the meaning of life and uh holistic everything and living forever.

Aubrey [00:58:26.05] I absolutely love working here in Silicon Valley. It's somewhere that really epitomizes for me the value of life. This is SENS Foundation research center in Mountainview, California. My official title at SENS Foundation is Chief Science Officer. It's a pretty respectable sized lab now, we have more than a dozen researchers working here. We're doing a lot of fundamental work, repairing the molecular and cellular damage of aging. And we accept always that much of the research that we're doing is going to take maybe 20-30 years to actually come to real therapeutic fruition. It's really just a case that California is a little bit ahead of the game, so it's very encouraging to come here and see a rather different attitude. I'm really no longer surprised at the hostility that is shown to this work. At the moment, we haven't developed this technology yet, you know, aging research has been pretty futile, but then power of flight research was pretty futile until it wasn't, so.

Bill [01:00:26.00] I think running this race is gonna help find me some funding especially when people start seeing what this particular 60 year old can do. It runs 138 miles and it's nonstop and it goes over two 18,000 peaks.

Dr. Watson and Dr. Strange [01:00:49.10] To any normal person you couldn't advise this as a sensible thing to do it's crazy, I mean to most people in marathon it's crazy, these guys are doing uh are doing seven or eight marathons at 18,000 feet, it's insane.

Dr. Watson and Dr. Strange [01:01:00.07] Couple of minor conditions that you'll face up there, the air is a lot thinner, when you start to go up to altitude it can cause part of your brain ultimately to pop through out of your skull which ultimately leads to death.

Dr. Watson and Dr. Strange [01:01:11.05] You guys are runners you probably don't listen to doctors much. We're both in agreement this is mental.

Bill [01:01:33.27] If I don't finish this race I'm not gonna cure aging either, but don't count on either one of those things happening, because I'm gonna cure aging or die trying, and I'm also gonna finish this race or die trying

Bill [01:02:46.12] Mostly spread up to there it's like, oh..that hurts.

Bill [01:03:02.10] I can't even walk around I'm just so weak, you know this might be just heart pain. Ok I don't know what a heart attack feels like.

Helper [01:03:09.23] I'll get the doctor, relax one minute

Bill [01:03:12.02] no way I'm getting back in this race. I'm sorry. Fucked up everything.

Bill [01:03:58.02] I really don't know what does happen when a person dies. I would guess that our brain just quits functioning and then we go into nonexistence, what good is that? There's no glory in dying.

I came here to get my heart to work on ?). But my heart didn't feel like this when I got here, you know?

Molly [01:04:48.29] well your pulse isn't like erratic or anything. It's fast, but..

Bill [01:04:57.08] I want a doctor

Molly [01:04:59.18] I think you're doing amazing, I think you're doing awesome. Just do this.

Bill [01:05:08.20] The car's gonna have to stay with me, if I can sit down and..

Molly [01:05:14.00] Alright read, let's go. Alright, I'm coming right behind you. I just wanted to tell you I'm so proud of you, seriously and eat and just take your time and look at the scenery.

Molly [01:06:10.11] Alright, yay!

Bill [01:06:22.10] I almost died. What's easier, curing aging or this race? I think curing aging. This was a tough race.

Bill [01:07:21.17] You are my adventure woman, our lives are gonna be just filled with adventure, I love you.

Molly [01:07:31.13] I will always be your best buddy, your best partner, and I am so excited to spend the rest of my life with you.

Molly [01:07:39.26] If Bill gets to his goal of curing aging, then our marriage is forever, and ever and ever, and ever. Think about that one. I'm ready.

Adelaide [01:08:12.07] One of the personality traits that a scientist should have is being honest to see what is there and not what you hope is there. Polo is the drosophila gene of the canonical polo kinase Aubrey's expectation is for me to either retire or have some way of doing my research in California, and that just clearly wouldn't work.

Aubrey [01:08:52.21] Certainly, the expectation of living a very long time might very well lead to a reevaluation of the value of permanent monogamy.

Adelaide [01:09:07.12] We're still married, we're still in love with each other, but he has three other women. His ideal, I think, would be to have a situation where all of his women live together and he could just live with all of them and I, it's just so not, so not my scene.

Aubrey [01:09:40.25] This is more or less the beginning of the property, to the front there's another way up on my left that goes to the back, and here's the main thing up the drive. Quite a sight. I guess I can view myself as something of a poster boy so to speak for a future lifestyle. Now here's the amazing house! I believe that in the relatively near future when we've brought aging under very considerable medical control, there's going to be much less difference between people of different chronological ages. I have three partners in my life, and they are of very different ages. My wife is 68 and my two girlfriends are 45 and 24.

Kim [01:10:44.22] We started a community, built as a immortality and polyamorous haven, and I feel lucky to have found myself in the melting pot of these two realms.

Aubrey [01:11:01.04] What an amazing place this is, it's gonna take me a while to stop pinching myself. Here we go! Cheers, my love! My ultimate goal on the longevity mission is to become obsolete. To do enough that there are people out

there who are better than me who therefore will supplant me in terms of being there to spearhead this mission and i will be, I will be very grateful to have the opportunity to retreat into glorious obscurity, and I can tell you that this is where I will be spending a lot of that retreating time.

Bill [01:12:29.25] This wasn't supposed to happen. Randy, he and I were on the same mission. There's no guarantees that the kinda stuff that we're doing is gonna work, but I want to feel like we've tried our best and that's my obsession I love living but life's a struggle.

Aubrey [01:13:42.05] Alright then, now everything else will be quite small. So this is the place my mother lived from October of 1963 when I was six months old until roughly speaking, Christmas a year ago, so we are here today for the very last time. Just clearing out all the stuff that remains. My mother was very much a compulsive hoarder so the first job that we had to do was to clear literally 50 tons of absolute rubbish out from this place. My mother died in May, she was very lucky in terms of how she went downhill in the end as well, she didn't have any hint of dementia at any point, she was bedridden for the last years of her life but, could've been worse.

Aubrey [01:15:06.26] It's pretty interesting saying goodbye to a place that I've lived in since I was six months old. It's curious how little emotional attachment I have, you know I just I just want to get the whole thing over with and use the money for research which is why I, where we've obviously assigned most of the funds that are being brought in for this sale and so that's the thing that's most on my mind, it's not really bothering me to be saying goodbye to this place. Well then, (ready to go?) absolutely.

Aubrey [01:16:06.04] If my mother had been healthy enough to benefit from these future therapies then she would very much have wanted to um to benefit from them, she had definitely not run out of things she wanted to do in her life by any means. So I'm all that's left of my family.