

Im a Mortal Episode 1: Dennis Kowalski – Cryonics Institute

Speakers: Dennis Kowalski (Guest), Marvin Yan (Host), Sufal Deb (Host)

[MUSIC - Im a Mortal Theme]

Dennis Kowalski 0:27

Hello, my name is Dennis Kowalski. I'm the president of the Cryonics Institute. And thanks for having me on your podcast, guys.

Sufal Deb 0:35

Yeah, we love having you here. For all of you guys listening, welcome to Im a Mortal. Today we have Dennis Kowalski, as he introduced himself and, Dennis, let's start off with a simple question. Since our podcast is about immortality, life extension and just aging in general, what does the word immortal or immortality mean to you?

Dennis Kowalski 0:52

Well, I mean, words are important but you know, the strictest definition immortal means you live forever. It's not really what we're trying to do in cryonics and a lot of the life extension movement, what we're trying to do is extend life radically. I mean, something statistically will get you sooner or later so I don't think any of us is really talking about true immortality, we're just talking about the same thing that regular medicine and diet and health and exercise and everything proposes to do, you know, extend our lives. Not just our biological life, but our healthy life, so that we can spend time with our loved ones and our family and enjoy. Enjoy.

Marvin Yan 1:39

Yeah, we can all enjoy more parks outside and nice weather. Right?

Dennis Kowalski 1:43

Right, right. Exactly.

Sufal Deb 1:44

Yeah.

Marvin Yan 1:45

Okay. So I guess, because we've never met someone in cryonics. It's not too often you do so I guess to start off with, how did you first get involved in cryonics at all?

Dennis Kowalski 1:55

When I was a younger kid, I read a lot of science and science fiction as well. And I noticed it was a recurring theme. And even in history, you know, you go back to the Egyptians and the pyramids, and know that people have always been seeking longevity. And you've always heard through different science fiction films about space travel, where they suspend a person's life status temporarily to get from a long distance from one area to another.

And it was in the 1960s, that Professor Robert Ettinger from Michigan — actually, he was a physics professor, and he decided to look into it and apply science to the theory that could we do it? He applied science to the idea and he wanted to see, is this possible? So he wrote a book called, *The Prospect of Immortality* and it became a number one worldwide bestseller. And it was, you know, he was on all the top circuits. I remember seeing him as a young kid, and I thought, boy, this is really interesting. It's fascinating. But you know, how are they going to ever bring anyone back? Are they just purely relying on the future. So I thought, it's a good idea, but I kind of stowed away in the background of my mind.

And later on, when I was a little older, 18, 19 years old, I read a book called *Engines of Creation* by Eric Drexler. In chapter nine of that book, basically, it's about molecular nanotechnology and it's basically the reverse engineering of life at the molecular level, the mechanical, reverse engineering, of what happens with biology. And the book really laid out a fantastic blueprint and concept of how we probably would be able to revive patients. It's not at all easy, and it'll probably take another 100 years or more for us to figure it out but it is in no way impossible. In fact, the book kind of shows a lot of biological and natural processes that, you know, in one shape, or form or another, reverse biological aging. I mean, when you think about it, when two people meet and have a child. Some of their cells in their body are reverting back into germline cells and resetting the clock biologically and there's all sorts of examples of this in nature. So it's just a matter of figuring out what Mother Nature does, and reverse engineering it.

Sufal Deb 4:53

Great. Yeah, I love those examples. And there's a lot of examples of even a lot of species like the water bear who you know preserve themselves for a long time in stasis. So for the audience out there, could you describe what exactly is cryonics and how does cryonics work?

Dennis Kowalski 5:09

So, cryonics is a process in which people after they're pronounced legally dead and I emphasize legally dead, that doesn't mean you're technically dead in the strictest sense. But once people are legally dead, they're in cardiac arrest, and all traditional conventional medical sciences given up currently, because our current technology can't bring you back. Well at that point, in an ideal situation, we get to that person, patient, we call them, as soon as possible. We put their body into a ice water bath. We'd continue CPR to circulate the blood and nutrients to the brain, but also to take and what am I thinking of, take the core, the warm core blood, and exchange it with the colder peripheral blood that's touching the ice bath, so that we can cool the person as quickly as possible.

The ideal is when you cool a person down there, the chemical reactions that are going on including degradation of a body is slowed down. And then we know this intuitively, you know, if you have food outside on a warm day, it's going to last much longer, in a refrigerator and then that much longer in a freezer or dry ice. So it's actually a function of the Arrhenius equation, which is exponential that the reaction time of the molecules just slow it down exponentially, the colder you get. So you're buying yourself time. So we know that, you know in emergency medicine, when you go into cardiac arrest, you need someone to do CPR as soon as possible. And the longer you wait, the worse your chances are going to be of bringing a person back.

And this is with conventional medicine. With cryonics, we eventually get the person into liquid dry ice, or I mean not dry ice, liquid nitrogen, and seconds of time actually become thousands of years. So the thought is, is that modern medicine, we're not at the zenith of our knowledge today, certainly. But modern medicine in the future, we'll be able to do things we can't — we couldn't have even dreamed of doing in the present. And I feel looking around, there's a lot of things we can do today that we couldn't do 40, 50 years ago. Heart transplants, even, you know routine cardiac defibrillation and CPR wasn't available 50, 60 years ago. So we're already in only raising the dead by using CPR and defibrillation. But anyways, I kind of got a little sidetracked there.

In an ideal situation we'd put a person in an ice bath. We ship them to the cryonics Institute in Michigan, Clinton Township, Michigan. They're at our facility, we do a blood washout. Blood likes to move so if it stays still, it'll clot. So we use anticoagulants and some other medications, we circulate them with CPR. And then we hook the patient up to the equivalent of a heart lung bypass. And we wash out the blood and we wash it in a cryoprotected solution that was developed by a cryo-biologist. And it's very similar to some of the solutions that go into when hearts and livers — when people do heart transplant or a liver transplant. But it goes a bit further — a bit beyond that. So the tissues are vitrified.

So you might think, if you put a body or human tissues in a freezer, that there might be ice crystallization. And with the vitrification process, we minimize that ice crystallization. We can't get rid of all of it currently, but we minimize it and we get rid of most of it so that future technology has less to repair. Then we put them into liquid nitrogen tanks. They're very much like a giant thermos bottle. There is no electrical — so you know people often joke about someone unplugging the tank, but no, it's just like a thermos bottle that's filled up with liquid nitrogen. Boil off rates take currently four or five months for all that liquid nitrogen to boil off, but we don't wait that long. We top them off every week. We check them every day. We've been doing that for 40 plus years without incident. And that's pretty much how the process works. It's a wait and see what the future will bring. If people will figure out how to reverse engineer biology so that we can revive and wake people up and revive and wake people up at a young youthful age.

Marvin Yan 10:42

Okay, wow, that was like a knowledge bomb on us, Dennis. I guess cuz one thing we were interested in was, I guess mentioned a bit earlier was we don't know a lot of people who are involved in cryonics. But what are the type of people that are interested in cryonics? Like, what kind of people are the ones that are signing up for this sort of procedure?

Dennis Kowalski 11:03

Well, definitely people who read a lot about science and are optimistic about the future. We tend to have a lot of people who enjoy science fiction, because science fiction kind of touches on — it kind of links the possible and the impossible kind of that reaching out fear about what might be, and that's the only way we find out what is possible by kind of reaching into that realm.

So you're going to find people who definitely are positive and optimistic. They tend to be — I'm just looking at our demographics of our membership. College educated, slightly wealthier. But you know, that's not to say that we don't have people who are less educated or have less money. It kind of spans across the board. I mean, we even have, we have people that are atheist, agnostic, and fundamentalists in all major religions. And that makes sense, really, when you think about it, because you could get a heart transplant or not get a heart transplant based on your religious or ideological beliefs.

Marvin Yan 12:19

Right.

Dennis Kowalski 12:19

You know, so it kind of follows along those lines. And in fact a lot of our detractors, and criticism is coming from people — It sounds almost like the same things. They said, when they were picking on people for heart transplants. They were saying that's weird, that's Frankenstein, or you're going against God or nature or something. But today, we take it for granted that those are great medical technologies. And bottom line, grandma, or grandpa is still here, you know, or mom or dad or brother or sister...

That's all we're trying to do. I mean, it may not work. But we can't honestly say for sure, until we're in the future. So, you know, I guess you could — I guess the big thing is, will everyone be able to be brought back and that depends on how quickly we get to the person after cardiac arrest, which is just the same as conventional emergency medicine.

Marvin Yan 13:31

So ideally, then, like, I'm trying to think, if someone has let's say as you said is technically or no legally dead, as you said earlier, like, what's the ideal amount of time to get to that to start all these CPR and to start putting them in ice bath and all that?

Dennis Kowalski 13:45

Immediately after the heart stops beating immediately. And in a couple situations, a couple of circumstances, we've been able to do that. But people don't really have the ability to plan their death. And so not every single cryonics case has gone, you know, that well. It spans all across. It's just like emergency medicine, there's times we get on scene alright. Formerly, I worked in emergency medicine as a paramedic in a major city. So there's times we could bring people back because we got there quickly and there's other times, you know, it was a futile effort. I mean, we tried the best we could, but we couldn't bring them back because too much time had elapsed.

Sufal Deb 14:34

Yeah.

Dennis Kowalski 14:35

One thing that I did learn though, is you just never know. There's people that you think, oh, it's been too long, and then they're back. And then there's other people you think, you know, we do — we got

there quickly, everything went absolutely right and they — it just was their time. We can't bring them back. So you just never know. But you know, you just give it the college try. You try your best and you fight the good fight. And that's what we're trying to do fight the good fight. You know, we care about life, and we care about people.

Sufal Deb 15:06

Yeah, for sure. So, you mentioned earlier that, you know, it tends to be the wealthier side for a demographic people choosing to be cryopreserved. So talking about costs, specifically, like where, where's the money going towards, like, cost for chambers maintenance, like, and even transport of the body towards your facilities?

Dennis Kowalski 15:24

Yeah, yeah. So that's a fantastic question. A lot of people assume that we're providing some kind of false hope and just cashing in on the money, you know. But the thing is, we are a nonprofit and not only are we a nonprofit, all of our books are open for public scrutiny. So you can see where every penny is spent, a lot of nonprofits don't do that. A lot of our workers are volunteers or work at much lower than normal, standard wage. So the money in cryonics goes to the kind of the equivalent of an endowment fund. It gets invested in index funds and after that, the interest is what pays for the perpetual upkeep. So like we charge 28,000. 28,000 was what we charged in 1974 and that's what we charge today. But most of the money, you know, a small amount goes to the procedure, most of the money actually goes in that endowment. And the interest is what pays for the taxes, the utilities, the salaries, and the liquid nitrogen, and so forth. That's what pays. As long as the economy doesn't collapse — the world economy, the way we're investing. As long as the world economy doesn't collapse completely for good, then we should be around and have the money to pay for the constant perpetual update. And most people use life insurance. So if you think about it, it's really not that much. Yeah, even for people of poor means — people who don't have a lot of money, it is affordable. Certainly for people who are, uber wealthy. I mean, it's nothing for them.

Sufal Deb 17:24

Yeah—

Dennis Kowalski 17:25

It's really, it's really one of those, to me, a Pascal's Wager. I mean, you got everything to lose, and I mean, everything to gain and nothing that lose.

Sufal Deb 17:36

Yeah, no, fair enough.

Marvin Yan 17:37

Okay. I know maybe not everyone knows about this but earlier, you mentioned the terms like technically dead and legally dead. I guess, what do you mean specifically by like terms, like technically dead like, I guess?

Dennis Kowalski 17:52

Well—

Marvin Yan 17:52

Sorry, Dennis go ahead.

Dennis Kowalski 17:55

Well, in cryonics, we often use a term called information theoretic death. So what that means is when you can't get any information out of the substance — so what do we all have in every cell? We've got DNA. So DNA is enough to in theory today, even with today's prude technology, clone you right, and replace and repair every single part of your body. But is that really you or just like a clone or a twin? That's not you, just looks like you. The other part of the information is your mind. So there it gets kind of tricky, because well what is the mind you know, it's the information that's encoded on that tangled web of nerves and synapses that we haven't quite figured out yet. Your connectome is what a lot of people refer to it as. Your connectome, which they're learning more and more about, as you know, we try to reverse engineer the human brain. But we feel confident that in there, in that biological computer is your mind. And that information is there. We do believe that, that information is redundant. And, you know, a lot of your memories are — they're backed up in multiple ways. And it's pretty hearty, but we do believe it's not impossible to lose that information, eventually.

So to use an analogy, if you take a computer and you throw it off the Empire State Building, it shatters in a million pieces, it's not a very functional computer, is it. But harddrive, you know, that may be broken in pieces. In theory, you could get that information off that hard drive. Or if you took the Mona Lisa and ran it through a shredder you could, in theory, piece it back together at the molecular level.

Sufal Deb 19:59

Yes.

Dennis Kowalski 20:00

You wouldn't wouldn't know that the Mona Lisa had gone through a shredder. But if you take that same computer and you melt it down, or run it through an acid bath or something like that and dissolve it, I think that there is no way you can get that information off that hard drive. So we believe that when a person is buried eventually and when they are cremated, or whatever — they decompose, information is lost forever. We believe that eventually, if a body is in warm temperature is long enough, more and more information is lost until there's no information there. But there's plenty of DNA. So I mean, it's likely still be able to bring the person back with a drop of blood. But is that the same person? And that's not what — we're not shooting for a cloning mechanism. We're shooting for restoration of your actual mind, and who you are as much of it as possible.

Marvin Yan 21:04

So the sooner you—

Dennis Kowalski 21:06

Unlike a stroke victim, like you think of someone like a stroke victim who might lose a little bit, they're not going to gain back certain things. But with technology powerful enough to bring you back, we should be able to regenerate tissues, and you should be able to maybe not gain all the information back. But you should, in theory, be able to gain every bit of function back. So you know, certainly a better prognosis than their typical stroke victim.

Sufal Deb 21:37

Absolutely.

Marvin Yan 21:38

So just to confirm, when someone is cryopreserved, the sooner you get back to them, the more I guess, information is preserved. And that's sort of the I guess what, that's what the goal—

Dennis Kowalski 21:50

That's a gold standard.

Marvin Yan 21:51

Right.

Dennis Kowalski 21:51

That's the gold standard, yes.

Marvin Yan 21:53

Okay. All right, just to confirm. Alright, so Sufal why don't you — what were you gonna ask?

Sufal Deb 21:57

I was gonna talk about like, what — we just talked about DNA and blood, and that could easily go into genetics. So are there certain conditions or issues that somebody might encounter that could prevent them from undergoing cryopreservation or no longer being a candidate?

Dennis Kowalski 22:13

Oh, well, you know, if you were lost at sea, or if you were maybe in a terrible fire, or there's a lot of things that could destroy your brain? Or, what if you had like a very advanced brain cancer? Or brain disease where your body did not biologically die? Like, by the time it did, your brain was pretty much not there? Then what are you saving just DNA then. So I can think of a whole host of things that can go wrong. But that's just like emergency medicine again, you know, I can think of a million things that will go wrong, you get caught in traffic, on the way to emergency run, that that person is down that much longer from whatever put them in cardiac arrest.

Sufal Deb 23:02

So just touching on that topic still, does cryopreservation typically surround the idea of preserving the brain or do, do most people tend to focus around the brain and the body?

Dennis Kowalski 23:13

Well, our organization — I mean, there's other organizations that will do head only or brain only preservation under the assumption that you can grow the body back. But our organization only does whole body. And, I mean, we kind of operate under the premise of do no harm. So we don't see any reason to remove someone's body, you know, that kind of Hippocratic Oath of do no harm. The only gain would be maybe a little bit of storage. You know, we don't operate like that ourselves. But certainly the most important thing is your brain. I mean, even in a conventional sense, if you lost your arm, that's not a good thing but it's not the same as losing your brain. You know, what would you rather — when it came right down to it, what would be worse?

Sufal Deb 24:10

Yeah, absolutely. So if somebody were to go under, like undergoes severe Alzheimer's or dementia, something that affects their memory and brain, would they still want to be cryopreserved? Or is the hope that after they're cryopreserved, someday in the future, that type of damage would be able to be reversed?

Dennis Kowalski 24:27

Well, that is entirely up to I mean, we don't know. That's, again, you know, a lot of this hits on to what we don't know. And so we leave that up to the person who contracts with us we leave clauses in there where they can say, well, if this happens, or that happens, go forward and try at all cost. Preserved me. Or, if this happens, or that happens, I don't want to be preserved. And take the money that I had earmarked for my life insurance, and send it back to my family or donate it to another scientific cause. Or donate it to us because you still believe in the process, but don't bother saving my tissues for a clone. So we follow the contract and the wishes of the of the person who contracts with us.

Marvin Yan 25:27

So for people — I guess this is thinking very futuristically. But you said right, as of I guess, right now, there's no method to bring someone back. But you know, maybe a few hundred years later, there could be some way. Are there, are there any hypothetical ways that that could happen?

Dennis Kowalski 25:40

Well, I mean, there's the engines of creation, talked about molecular nanotechnology, which is kind of a micro miniature robotics that would be reverse engineered and designed based off your biological system, right, the repair systems that exist at the molecular level within your body. So copying nature, because nature had billions of years to perfect what it does through evolution. Copying nature, we'd reverse engineer and maybe have some kind of robots, microscopic robots injected into your system, and they'd cross check your DNA and say, oh, yeah, things are supposed to look like this, but they don't look like this. So let's rearrange these molecules this way, or that way, until things look the way they're supposed to. And I know that sounds pretty science fiction, like, but it's really how biology repairs our tissues now.

Look at stem cells. Stem cells are, you know, your body's taking — I mean, we can take today, some old differentiated cells out of your — skin cells out of your arm and, then we reverse time and undifferentiate them back to the stem cell state, and use them maybe to repair dead heart tissue, or

some other aged tissue in your body. Either repair and or replace it. And so you get into some kind of hairy philosophical questions of, you know, how much can I replace? And is it still me?

Marvin Yan 26:40

Oh, yeah, identity, right?

Dennis Kowalski 27:21

Identity, but then you can say, you know, is it really, the components that make up me, or the information that make up me? So, I mean, we're constantly eating food and right, shedding skin, and, you know, bringing in molecules, molecules and molecules out. What really are you, but the information that's encoded on that, on that substrate that is your body. So I think we're more of the information, I mean, or really kind of combination of both, we're both. But I mean we can lose, we can lose a lot of biological matter, and replace it as long as we hang on to the identity.

Sufal Deb 28:11

So, we actually jumped over this topic. So I'm sure euthanasia is a big topic with cryonics because, you know, the whole facets of legally being dead medically being dead along the lines of that. So since it's already a hotly debated topic, what are the benefits of cryoethanasia and has it been done before?

Dennis Kowalski 28:28

Well, you know, it's still not fully accepted in most of the world. Euthanasia that is.

Sufal Deb 28:36

Yeah.

Dennis Kowalski 28:37

But one thing that does seem to be accepted in most of the world is the ability to refuse medical treatment when you're in a terminal condition.

Sufal Deb 28:48

Yeah.

Dennis Kowalski 28:48

So you know, we're not talking about someone who was depressed and doesn't want to live, but we're talking about someone who may have end stage cancer, and they don't want to go through the very end where it's very painful, and they feel maybe they're a burden on themselves and society and their families. And, and, and they're just living in pain. So you could you know, for a goal, maybe if you're on a ventilator, you could be removed from the ventilator or for goal, sort of a medical treatment, or even cancer, chemotherapy, for instance, and then speed things up. We have had people who have exercised their legal right to not pursue medical treatment, and sped things up and made for better cryopreservation. And that's their choice and that's fully legal. But when it comes to actually assisting someone or, you know, allowing them to commit suicide, that's something that — I mean we'd have to look at that by a case by case situation. Was it done in an area where it's legal

and ethical and moral. We certainly don't want to ever be involved in anything that encourages people, you know, commit suicide because they're depressed or not in a terminal condition, or certainly anything that's illegal in any way. We don't want to be involved with that. We would turn someone down if they did something illegal or unethical or immoral. Because we have to preserve the whole organization and movement and all the patients that we have already.

Marvin Yan 30:40

Okay. Wow. Thanks for sharing all that, Dennis. And I mean, I guess, being involved cryonics to the extent you are like you're providing this service for people. I guess it's kind of a personal question. But you know, towards the end of, you know, your life, would you also want to go, undergo cryopreservation yourself?

Dennis Kowalski 30:57

Absolutely. I'm signed up, my family signed up. And as a condition of being on the board of directors in cryonics, the leadership, who, by the way, the whole leadership is democratically elected by our members. So its members elected by members who ran for the board, and then were elected. And then they pick the officers. We all have contracts signed up for cryonics. So we all have a vested interest. We did that by design. We didn't want someone who didn't have a vested interest in current cryonics running cryonics. And so yeah, I, I believe in it. Do I believe absolutely, positively, this is going to work? No, I mean, I think we're very pragmatic, very rational people. And do we absolutely believe that when you call 911, they're going to save you?

Marvin Yan 31:54

Well, you have to be an optimist. Right?

Dennis Kowalski 31:56

But if you don't call 911 your chances...

Marvin Yan 31:58

Yeah.

Dennis Kowalski 32:00

Right. Right. So you know, I am, I wish more people would sign up, because I mean, people join up for all kinds of — to me, irrational stuff. You know, cults and cargo cults type of stuff. Yeah. And this is like, pretty rational. I mean, pretty Pascal's Wager type stuff. But maybe because we don't oversell and we're brutally honest, that, hey, this might not work. You know, but this is the only chance in town, and as far as I'm concerned, even if it doesn't work, it's still a good thing, because it's proving what can or can't be done in science. That's the only way we find out what can or can't be done. That's the only way we advance as a species.

Sufal Deb 32:51

Yeah, absolutely. Speaking of cryopreservation and requirements for say, is there a location requirement? Say I live in Europe, am I able to still be a part of the cryonics Institute as a member?

Dennis Kowalski 33:02

Well, yes. In fact, a lot of our members are all over the world. You know, the farther away you are from civilization, I guess, the harder it becomes. But there is kind of, we call them like, kind of like outposts or standby communities all over the world. So like, for instance, there's an organization called Cryonics UK in England, where they don't have a long term, cryogenic facility or cryonic facility, but they have people that will prepare you. And they've got the whole structure set up to prep people and get them ready for shipping through international funeral director to get to our organization and others. So these people have kind of taken the initiative. And a lot of people contract through funeral, funeral services, their doctors, other organizations that will do standby and it's really interesting, what people have done to get to us. So we kind of like to think of ourselves as the ambulance ride to the future. That may or may not exist. It is to some degree, you know, where people have to get an ambulance ride to the ambulance, right?

Sufal Deb 34:29

Yeah.

Dennis Kowalski 34:30

They've got to, they've got to prepare. And because they're — but that's just like anything else. I mean, you can, you can learn CPR, and, you know, if your loved one goes down, they're gonna have a lot better chance than if you just call 911 and watch them gasp for air. If you do CPR while 911 is coming, maybe ambulance is caught in traffic, or what have you. So you know, you can do a lot to prepare always when it comes to you know, your health and your longevity.

Marvin Yan 35:03

Okay, Dennis I know, we're keeping you from your family brunch. And I don't want to keep you any further. But we have just one more question, which is, I guess from everything you've said today, is there one thing you really want people to take away?

Dennis Kowalski 35:14

Well, I'd like to say that if you know if you're interested in any way, in cryonics, there's a ton of information out there, we've got a wonderful website with a magazine that is digital open to anyone. It's cryonics.org. And we welcome anyone to do research and if it's for you, you know, welcome aboard. And even if it's not the deal, you might be very interested in finding out what cryonics is and isn't. There's a lot of myths and misconceptions out there. So I do encourage people to look into it.

Sufal Deb 35:50

Absolutely. Great. So I think we're at the end of our interview here so once again, we wanted to thank you Dennis for coming on. We enjoyed having you as a guest and we've definitely learned a lot and hopefully our audience will as well. Other than that —

Dennis Kowalski 36:04

Okay, well now when are you what are you guys signing up?

Marvin Yan 36:08

Let me check my how much I'm making this summer. Alright.

Dennis Kowalski 36:12

Hey it's just life insurance, which is really cheap when you're young. When you get old that's when — then they won't even insure you.

Marvin Yan 36:19

Okay, well, Dennis, if I sign up, you'll be the first to know.

Sufal Deb 36:22

Yeah you'll be the first to know. You'll get a wordy email about our signing up.

Dennis Kowalski 36:25

It's not like I get a paid — I don't get a commission.

Marvin Yan 36:30

I'll hold you to that. Alright. Alright. Thank you so much Dennis.

Dennis Kowalski 36:35

Take care, gentlemen. Bye bye.

[MUSIC - Im a Mortal Theme]