Episode 102 Transcript

Jaclyn Smeaton (00:01- 03:02)
Welcome to the DUTCH Podcast, where we dive deep into the science of hormones, wellness, and personalized health care. I'm Dr. Jaclyn Smeaton, Chief Medical Officer at DUTCH. Join us every Tuesday as we bring you expert insights, cutting edge research, and practical tips to help you take control of your health from the inside out. Whether you're a healthcare professional or simply looking to optimize your own wellbeing, we've got you covered.

The contents of this podcast are for educational and informational purposes only. The information is not to be interpreted as or mistaken for medical advice. Consult your healthcare provider for medical advice, diagnosis or treatment. Hello and welcome to this week's episode of the DUTCH Podcast. Now today's episode is a topic that we've never covered before. And frankly, I've never learned much about before due to I call it just controversy and lack of exposure and that's stem cell therapy.

Now, when I first thought about this topic, I wasn't really sure what I was going to expect out of this podcast today, but I got to tell you, it was fascinating. Now, just to kind of prime it, when we think about how our body heals and repairs and what we do as functional medicine providers and naturopathic doctors is we work to limit the things that cause damage to tissues and cells, right? Like reducing inflammation, reducing oxidative stress. Most of our therapies are geared in that way.

But we don't really put much thought into how new cells are laid down and built. And really the stem cell science is emerging now after about 25 years of research where we're starting to really understand how that process happens mechanistically. And what I realized after the podcast or during the podcast episode is that this was a gap in my own education. But as being trained as a naturopathic physician, you know, we're taught about the healing power of nature, the vis medecatrix naturae, and part of that is how when you cut your finger, it heals on its own. You know, you have skin, but what is happening mechanically to make those cells regrow and make that tissue heal? Well, if the idea of tissues repairing and regenerating, coming back to whole that healing process, if you've never really thought about how that regeneration and healing occurs, you have the chance to learn that today. And really for me, it filled a gap in this kind of black hole of immune processes and regeneration that I've never really asked the questions about. And really we've not talked much about in science. Our guest today is Christian Drapeau. He's a scientist, an author, a medicinal plant expert, and really he's a pioneer in the field of stem cell research. He comes from a neurophysiology background and he's been researching stem cells for the last 20 years.

He's written five books, lectured in courses all over the world, and he's a scientific advisor of many companies and currently is a founder and the chief science officer of STEM Regen. So Christian, thank you so much for joining me.

Christian Drapeau (03:02 -03:04)
My pleasure, thank you.

Jaclyn Smeaton (03:04 - 03:33)
Now, I want to talk about something that we've not talked about on this podcast before, and I think most physicians enter into with a degree of skepticism. I think when we first learned about stem cell therapies, this was probably 20 years ago when you were beginning your research on it, and the field has really transformed quite a lot over the years. So can you just start by sharing a little bit about your backstory? Where did you learn first about stem cell therapy, and why did you get interested in stem cells?

Christian Drapeau (03:33- 07:08)
Okay, so my background as you mentioned earlier on is neurophysiology. So was doing research on memory and epilepsy at the Montreal Neurological Institute. I'd always been interested in plants since I was a kid. So at some point this opportunity opened for me. So I moved to Klamath Falls in southern Oregon to work for a company that was selling blue-green algae that grows naturally from that lake, so Klamath Lake blue-green algae. And my task, this was right after the passage of the Dietary Supplement Health and Education Act, so 1995. And my task was to study the mechanisms of actions and the active compounds behind the health benefits of this blue-green algae so that the company could basically promote those benefits on the basis of science.

So I very, very quickly identified the active compounds and mechanisms of action behind the effect on inflammation, on immunity, on sort of mental clarity, mood elevation. But as I'm doing this work, I came across people reporting benefits with multiple sclerosis, heart disease, diabetes, emphysema, hypothyroidism, Parkinson, Alzheimer's. I mean, so many different aspects of human health that it was a challenge to be able to explain how this was happening in the body. So what was this plant doing to touch so many different aspects of human health? And the knowledge that I had on stem cells was the same that any med students used to have. Probably, I would venture to say, probably still today, where they're told that, or we were told that stem cells are only precursors to blood cells.

They cannot become cells without the tissue. So the turning point for me and what really led me to the whole field of stem cell research, so January 2001, I came across an article documenting for the first time to my knowledge, stem cells going from the bone marrow to the brain and becoming a brain cell. So we need to go back to 2001, stem cells are only

known to be precursors to blood cells and of all organs and tissues in the body, there's one that we know does not repair and it's the brain.

So to see a stem cell is going to the brain, I thought was like pretty impressive. So I was curious, so I went to the local medical library to see what else I could find. I found another paper describing stem cells going to the liver and becoming liver cells, another one going to the heart and becoming heart cells. So I just thought that it was just a matter of time before scientists would document that stem cells can become everything because how can a stem cell become liver, brain and heart and not the rest?

It's like to me, it made no sense. And if that is happening, then that means stem cells must be the repair system of the body. So we published an article in Medical Hypotheses, this was 2001, saying that stem cells, looks like stem cells are the repair system of the body. And in the back of my mind, just like we have plant stimulating the immune system, there must be plant stimulating the repair system. So what if this blue-green algae, what is, this is his main mechanism of action stimulating the release of stem cells from the bone marrow. So stem cells will go into pancreas of the diabetic, the heart of the heart patient, the lung of the emphysema patients, and so on. So we acquired the equipment to count stem cells in the bloodstream, and we discovered that this is how this plant was working. So from that point on, so we're probably, what I would say, March, April, 2001. So from that point on, I've been in the world of stem cell research ever since.

Jaclyn Smeaton (07:08 - 07:27)
Amazing. I mean, let's roll it back a little bit. And for people who are maybe newer to stem cells, can you talk a little bit like from the beginning, like what is a stem cell? know, and we can even talk about like in the embryology, you know, through that transition as we have fetal growth. And then what happens to stem cells as we become adults?

Christian Drapeau (07:27- 11:09)
Okay, I think it's interesting in the scope of that question to give a little bit of the historical development of all of that because for most people, early 2000s stem cell research appears just like this new thing. Like it went from nothing to basically being like this whole field of research. And as you pointed out in the science of embryology, we have known for quite some time, like since the, I would say 1960s, that you can take a sperm, you can take an egg, and when you combine them, you get a zygote, which is the ultimate cell, because this will become a full organism. Now, if you let that cell develop up to about like 10 days old embryo, you can isolate these different cells, and each one of them will become a full organism. And that's how the whole science of cloning develops. So they have cloned mice, rabbits, dogs. People may remember the sheep dolly.

And then later on scientists were able to do this in primates, but nobody was ever able to do it in humans. But the dream was, and I'm sort of paraphrasing here because I have not read anywhere that it was like the dream of the scientific community. But the idea is that if we can take these embryonic stem cells and make them develop into a heart, a human heart, a human liver, human lung, then it changes the entire world of not only organ transplant, but almost like longevity, like your heart is starting to decline, well let's go to the shop and get yourself a new heart. So I think it was little bit of the dream. So there was a push to be able to do this in humans. While all of this was being developed, there was this general understanding that came from data, that came from the 1950s and 1960s, that the human body, the adult, has stem cells in the bone marrow, but they're limited.

All they can do is become blood cells. Because technically a stem cell is a cell that can become other type of cells compared to somatic cells, which is cells of your muscles, of your heart, your brain, your skin, everything in your body. They will not transform. They will only do one specific function. to a large extent, they will not multiply. So at the other end of the spectrum, you have stem cells. Their role is nothing as a stem cell. Their role is to transform and become, become various types of stem cells, of tissue cells. And historically, your bone marrow stem cells only make blood cells. So at the turn of the century, a group of scientists was able to cultivate in test tubes, human embryonic stem cells. And that is the birth of what we see today as stem cell research. It really brought back this idea that we could grow human organs for longevity, transplant, whatever the need.

But very quickly it became clear that embryonic stem cells have this amazing ability to become everything in the body because they become a full organism. So that means they have a huge, huge risk for tumor formation. And that's the reason why they have never been used in treatments. So then scientists went back to bone marrow stem cells or other types of stem cells. Now that the dream is awakened, where can we find stem cells that could do the job?

So we went to umbilical cord stem cells and we found that fat stem cells also exist that can be regenerative. We found that bone marrow stem cells indeed are not only capable of becoming blood cells, but they can become pretty much everything in the body. And that is really all this discovery that came to what we see here today with all the options in terms of stem cell treatments.

Jaclyn Smeaton (11:09 - 12:12)
Now, it's amazing and I like want to just reinforce for listeners. think this was when I started looking into epigenetics and studying that because I do fertility work. So like the role of

preconception prep and when you talk about the egg and the sperm, making sure they're really healthy is that, you know, I don't know if anyone's ever thought about that, the way that it's the same DNA in that stem cell that can become an eye cell, a liver cell, a skin cell, a cardiac cell. And it's really, it's all the same DNA. So I just think that...when we think about just the miracle or the potential in a stem cell, it's really awe-inspiring, to be honest, that we could have the programming of just what's meant to occur naturally, but then with the influence of environment, that could influence how well a cell like that could transform, or could tell, I mean, how does a liver cell know to be a liver cell and not an eyeball cell? It's really amazing to think about just the level of are a number of things that have to go right to make an organism from, well, it's unbelievable.

Christian Drapeau (12:12- 13:00)
Yeah, no, that's totally correct. You take a stem cell, all cells of the body have the same DNA. When it is a stem cell, it has breaks that are put on that DNA as the cell becomes cells of a tissue to prevent it to become something else. But in the stem cell, those breaks are not there. So if that stem cells end up into a liver or liver tissue, there are specific molecules that exist only in the liver that is going to basically flip a switch in the nucleus of that stem cells that will start to activate and express all the genes that belong to being a liver cell. And in that cell, it will become its transformation and will become a liver cell. you're correct. That's exactly what is happening.

Jaclyn Smeaton (13:00 - 13:12)
It's unbelievable. So how do stem cells contribute to tissue repair and our overall health span when we look at them from your point of view 20 years later, 25 years later?

Christian Drapeau (13:12 - 13:15)
So how stem cells contribute to our health?

Jaclyn Smeaton (13:15 - 13:19 )
Yeah, and our tissue repair, you'd mentioned kind of this new application of...

Christian Drapeau (13:19- 17:35)
Yeah, yeah, stem cells are literally the repair system. And it's, it looks, I wouldn't say complicated. It looks like hard to swallow. And the only reason why it's hard to swallow it's because the last systems that we have documented in the human body were at the beginning of the, of the 1900s with the immune system, endocrine system, nervous system. And for a century, we have the body that we have thinking that that's the whole, that's what it is. And suddenly we discover that we have a repair system. It's hard to swallow that science has not seen that before, but we just have to accept it. That's what it is. So the human body has a repair system, just like you have an immune system. Let's say I

cut myself and I have bacteria entering the cut. So these bacteria will encounter macrophages or immune cells that will detect that, okay, there's an invader.

So these immune cells will go to the closest lymph nodes and will trigger the release of immune cells. These immune cells go everywhere in the body, but when they go into the fine capillaries where I have the infection, they will leave the blood circulation, go into the tissue, literally crawl to beside the bacteria, and then will release compounds that will kill these bacteria. This is our immune system that we know very well. Well, at the same time, if that injury is significant enough, it will release compounds that will go to the bone marrow, will trigger the release of stem cells from the bone marrow. If you have a significant injury within three to five days, you will have an increase up to tenfold in the number of stem cells in circulation. They go everywhere in the body. And but as they go into the fine capillaries of the affected tissue, locally, there is one compound that is released that triggers the migration of stem cells out of the blood into that tissue and upon contact with cellular debris of that tissue, stem cells will multiply and then transform into cells of that tissue, literally repairing the tissue. And the part of all of this that to me is absolutely the most fascinating is that what I'm talking about here has been hidden in plain sight in the life of every single human being on the planet. Everybody has had a cut, a burn, a bruise, a broken bone, something, not only one, dozens, if not hundreds in our lifetimes, everything heals. And in medical science until today, nothing was said about that repair process. It was absent of our medical language. You break a bone, the doctor puts you in a cast and says, come back in six weeks. As if like whatever happens in that six weeks was some sort of like magical process. Nothing was ever said about that process. And now we discovered that it is stem cells.

They are the repair system of the body. So that is the main role of stem cells in the body. But when you talk about health span, it brings what I believe to be probably the greatest aspect of that stem cell discovery. When I say the discovery of stem cells is the greatest discovery in the world of medicine of our times, that's what I'm talking about. It's the fact that when there is no injury, like on a day like us today, we don't have any injury today.

Our stem cells are playing a crucial role in replacing the cells that are being lost. And what I mean here is that we experience aging as a slow decline, like an old fence in your background. Every year it's a little bit worse until the day that it's falling apart. We experience aging that way, but it is not how the body is aging. The body is aging through a process of tissue turnover. We lose cells every day. Stem cell research has clearly shown we get a new skin every month, a new endometriosis, not endometriosis, but endometrium, every month. You get a new liver every two, three years. Half of a new heart every 25 to 50 years. We thought the heart was not, like after 18 years of age, the heart that

you have is what you have for the rest of your life. Now we know that the heart renews about 1 % a year. So this constant tissue turnover means I lose cells every day. So to stay healthy, an organ, you must replace the cells that are being lost. That's the role of stem cells. So every day of our life, stem cells keep you healthy.

Jaclyn Smeaton (17:35 -18:21)
Well, I'm having like a lot of light bulb moments as you're talking because we know, you know that cells, they're damaged by things like oxidative stress and other exposures that happen to our body. we, I mean, I think we all, like you said, we consciously know that we recognize that in science and we recognize that those cells are cleaned out by the immune system. But of course there needs to be that repair, that regeneration that has been kind of missing in the story, I think for most providers, healthcare providers, scientists, because we know that there's apoptosis and lysis and cleaning out of old cells, but then the question is, how do they repair? Because if there was not a repair and a regeneration process, our cell numbers would decline.

Christian Drapeau (18:21 - 18:23)
Exactly. Isn't that fascinating?

Jaclyn Smeaton (18:23 - 18:34 )
I never really thought of or talked much about that before. So that is really interesting, just conceptually, that gap that really seems like it was slowly recognized, very slowly recognized.

Christian Drapeau (18:34 - 22:04)
Yeah, it's like a black hole in medicine and we're completely blind to it, which is typical of science. Until you see something, you don't see it and you cannot think of it because it was not there. But the big consequence of this or the part that I think is what matters most for the whole formation of disease is that we are born with red marrow that makes stem cells and very early on in our lives, this red marrow converts into fatty marrow that does not make stem cells. I mean, it does to an extent, but virtually, let's say, is not making stem cells. So, and that happens very quickly in our lives. By age 15, we have lost about 50 % of our red marrow. Some point in our 30s, up to 90 % of our red marrow. And that is reflected by the same level of decline in the number of circulating stem cells that are available to participate in this process of tissue renewal.

So we all experience at some point in our 30s, we don't recover as well as we used to. You've got an injury and suddenly this one is lingering more than it used to. And this is the sign that right now the number of stem cells available every day to offset cellular loss, that process of losing cells that you just described, then you don't have enough stem cells to

offset that. So now you start to have a daily deficit, but it's very small. You absolutely do not see it, but it cumulates over time. So I published an article about, what, 2013, in which I was proposing that this decline in the number of stem cells in circulation is actually the fundamental cause of disease formation. Because if you lose cells in your pancreas and you cannot replace these cells over time, that's what is called diabetes. If you lose cells in your heart and you don't replace them, that's cardiomyopathy. If you lose cells in your lung, it's emphysema. You lose cells in your brain making dopamine, it's Parkinson.

Every single age-related disease is the loss of a type of cell that stem cells can replace. So when you start to look at this, in this article I propose that there's a way to test if there's validity to this. Let's go and count the number of stem cells in people who have developed various kinds of age-related disease and let's compare that with healthy people of the same age. And now if you look at any kind of cardiovascular disease, atrial sclerosis, eye blood pressure, heart disease, emphysema, COPD in general, kidney failure, diabetes, Parkinson, Alzheimer's, even things like migraine, lupus, arthritis. I mean, the list keeps growing. All these people have 50 % or less than the number of stem cells that you find in healthy people of the same age. So across the board, we develop problems because we don't have enough power to offset this normal cellular loss that happens with aging and it gets worse as we age because we're more and more exposed to hormonal disruptors, to free radicals, to just wear and tear. So as the wear and tear gets bigger, the ability to offset it gets lower, declines. And that leads to the development of these problems. So when you ask the question about what's the impact of stem cells in health span. I think it's all there. Not in injuries, not in repair, but in everyday replacement of the cells that are being lost naturally.

Jaclyn Smeaton (22:04 - 23:03)
Now, when we think about what we can do to help patients who are in that, I think the midlife phase is such a critical, I mean, they all are. I had a doc once say to me, she says to all of her patients, this decade of life is the most important decade for you to put on muscle. Whether they're 30 or 50, she always says it. So I think this is always true. But we are always working to reduce exposures because the capacity to handle exposures like environmental toxins declines over time.

But I'm curious and people's natural abilities a little bit different based upon mitochondria concentrations and things like that. And of course, things like smoking that cause massive oxidative stress. have these lifestyle modifiers for let's say the rate of tissue damage, stress, trauma, food, you know, we can manipulate that. there or is that programming around the number of stem cells that you have, is that inborn or is that modifiable?

Christian Drapeau (23:03 - 24:29)
It's a very, very good question because if we could find a way to slow down the conversion of the red marrow or even do what is known as reconversion, like grow back the bone, the red marrow, we probably would put the finger on the most anti-aging practice that we could ever have. You basically give back to your body when you're 40, 50, 60, the ability that it has to repair when you were, let's say, 20, 30. So it would be huge.

Today, very little has been done. So I'm not saying that we cannot discover anything. But of what is known today for this conversion of red marrow into fatty marrow, the only thing that is known is hyperbaric chamber can boost the ability of the bone marrow to make stem cells. Fasting, it has not been studied enough, but fasting for more than three days have been shown to increase the number of stem cells in circulation, but more importantly, to rejuvenate these stem cells, probably through the simple process of autophagy. But you take a stem cell from the bone marrow before and three days or more after full fast. And if you test these stem cells with their ability to proliferate, migrate, differentiate, your stem cells post-fast show rejuvenated capacity. Like they behave as a younger stem cell. So fasting is the only thing that I know of that has been shown to give you back a little bit of this younger capacitor.

Jaclyn Smeaton (24:29 - 25:14)
Yeah, there's a company that promotes like fasting-mimicking diets. And what's interesting is I've read a couple of their trials is that the studies show that doing a five-day fast, fasting-mimicking fast, so you are eating about 500 calories per day, doing it once per quarter actually has better outcomes with cardiovascular rejuvenation compared to therapies that are consistent across the entire year, which is really interesting, but it kind of speaks to maybe some of the underlying reasons for that. If you can get a natural boost in activity, regenerative activity that is lasting or persistent for, I guess in three months would be what they would propose. That might be a nice way to support that. That's really cool. Well, we're a hormone podcast, so I'd love to know a little bit more about the impact that hormones have.

Christian Drapeau (25:14 - 25:21)
Yeah, totally.

Jaclyn Smeaton (25:21 - 25:33)
on stem cell activity and tissue repair. what about, let's maybe start with the sex hormones, estrogen, progesterone, testosterone, any of these directly influence stem cell activity or mobilization?

Christian Drapeau (25:33 - 28:20)
Yeah, mean, so not tons of studies have been done in that area, but it's almost like they're all pointing in the same direction. And before I answer the question directly, let's just take a little bit of a distance from the data. I'm starting to realize as stem cell research continues, something that is super easy to understand, but I find it fascinating. If you have a cold, you want to boost your immune system. If you have an infection, you want to boost your immune system.

The only thing in your body that is going to get rid of a bacteria is your immune system. It's not your cardiovascular system, it's not your endocrine system, it's just your immune system. When you have an injury or something is damaged in your body, you only have one system that is going to repair that tissue. It's your repair system, it's your stem cells. So anything that is known today to help boost repair, and we know that good hormonal balance support good repair, it's because it's supporting stem cells in one way or another.

So generally speaking, we know that good hormonal balance supports repair. And now we know that through some of those studies, it is by stimulating stem cell function. So good hormonal balance, estrogen, progesterone will support release of stem cells from the bone marrow and will boost the differentiation of stem cells into brain stem cells. So neuro progenitor cells, bone stem cells, not bone stem cells, but bone cells.

So bone, ematopoietic stem cells as well, so red blood cells. So it helps a lot of things that we know. When we have good hormonal balance, we know that it supports cognitive function, it supports bone health, and then when you lose estrogen, you start to also lose cognitive function, you lose bone density. So hormones, estrogen, progesterone, have been really connected to these function in stem cells.

Testosterone, I mean, we know testosterone has been associated with muscle strength. Well, we know now that testosterone supports the boosting of satellite cells and their ability to merge with muscle cells. So when you get muscle hypertrophy, you get strength. We know that muscle cells have many nuclei. The reason why muscle cells have many nuclei is that they grow by having a type of stem cells in a muscle called muscle stem cells.

Sorry, satellite cells, which are the stem cells of muscles, they merge with muscle fibers, muscle cells to grow these muscle cells and make them stronger. So testosterone boosts that aspect of muscle growth. So, and then help replenish the muscle with new stem cells. So that is in the big picture, the link between stem cells and hormonal balance.

Jaclyn Smeaton (28:20 - 28:37)
And we know there's some like rapid aging that happens during times of rapid hormonal

decline, like perimenopause and early menopause, which are you suggesting or does the data suggest that that's a big contributor to that as you lose that stimulating effect?

Christian Drapeau (28:37 - 29:02)
Of course, the moment we understand that stem cells are not only the repair system of the body, but the renewal system of the body, keeping the body healthy, the moment that these elements that are known to stimulate stem cell function, repair, muscle growth, bone density, brain, the moment that you remove that boost, then you start to experience the negative sides of no longer having that.

Jaclyn Smeaton (29:02 - 29:22)
Now, when we think about like the cortisol hormonal system, the HPA axis and the role of stress, and the other one I want to talk about is blood glucose and insulin. You know, are those more contributing to a faster rate of damage or do they also have impacts that we know about on the regenerative process?

Christian Drapeau (29:22 - 31:34)
There's an interesting loop in there because when in the early days of all this research my thought was as we start to look like I talked about before as we start to look at people who have developed various kinds of age-related disease or generative diseases the more advanced they are the fewer stem cells they must have and it's a causal factor if you have fewer stem cells you cannot repair as well so we'll have more degeneration which is true for many many conditions but when you come to diabetes, insulin production, glycemia, the loop or the relationship is more complex. So if you have a higher glycemia, you get more glycation into your body and it reduces stem cell mobilization. So you end up having fewer stem cells in circulation and with fewer stem cells in circulation, you're not as capable to produce new pancreatic cells making insulin.

So it's basically, it's this vicious cycle that leads you to further development in diabetes. and then insulin has been shown to stimulate stem cell proliferation. So the moment that you have a decrease in insulin, then it has then this negative effect on stem cells. So there's a real orchestra here. Like there's a real link, not link, but interaction between glycemia, insulin production, and stem cell function. When you go to cortisol, it's a different, scenario but it's just as damaging. And this was actually the first time that this was documented. It was in rats, so in animal studies, where they would put, they wanted to study the impact of stress on stem cells. So if you take a stem cell from an animal and you look at its ability to migrate, to proliferate, to differentiate, and then you take this animal, put it in a pool where it's stressed, and then you take it out of the pool, and then you take another blood sample, you isolate stem cells, and you do the same test.

You see that after exposure to stress, you've shut down stem cells ability to do their work in the body, which is to migrate, proliferate and differentiate. Now, if you take the same animal and then you remove the adrenal glands and then you do the exact same process, you do not see the impact on stem cells. So it's cortisol. It's cortisol base. And to me, I mean, what it means for human life is that we are exposed to stress, I mean, in modern life, not only

Jaclyn Smeaton (31:34 - 31:45)
Interesting.

Christian Drapeau (31:45 - 32:27)
us as adults, but I mean it starts now as kids in primary school. We are exposed to stress for decades in our lives and we know that stress has been associated to so many, not so many age-related disease, but I will go as far as to say every single age-related disease has a stress as one of its contributors. So now understanding that stress suppresses our ability to do this day-to-day job of tissue renewal I think we're putting our finger here on one of the main causal fundamental aspects of the body in terms of disease formation, which is stress, cortisol, and its impact on stem cells.

Jaclyn Smeaton (32:27 - 32:46)
That makes a lot of sense. When I think about, because there's the opposite of that, like that concept of hormesis where like small amounts of stress are actually beneficial and you see that play out in wellness trends like cold plunges as an example. Have they studied things like that around the impact on stem cells or not yet?

Christian Drapeau (32:46 - 33:32)
It has started, so cold shock protein, for example, has been shown, and again, we take a step back here, anything documented to suppress inflammation and help repair somewhere as an effect, direct or indirect on stem cells. So cold shock protein has been shown to stimulate stem cell function. So there's a link there with, there's one study fairly recent that has shown that it can reduce cold shock protein or exposure to cold can suppress the ability of satellite cells and muscles to actually merge with muscle. So it reduces inflammation, but could reduce also hypertrophy over time. So if you do this to build muscle, then it may not be as effective. But aside from that, it supports stem cell function and repair.

Jaclyn Smeaton (33:32 - 34:09)
Great. So I want to shift and talk a little bit about the influence of stem cells on our hormonal systems as well. I think listeners are probably thinking about that. for myself, I've spent most of my clinical career on infertility. And it's really exciting because there's a whole regenerative field growing right now where they're starting to see women in

perimenopause and even some cases of postmenopause where they've been able to get the ovaries to produce healthy follicles and healthy ovulation resulting in healthy children. I'd love to know your thoughts on that or like what the data has shown in that area of reproductive health as well for men and women.

Christian Drapeau (34:09 - 36:42)
Yeah, absolutely. I mean, it is a new area, but the results so far, to me, is extremely, extremely promising. they are, I have a colleague, for example, that will extract your own stem cells, activate them, and go and inject them in the ovaries, and is getting really, really good results for fertility, as an example. So we have, with, so my work has been mostly with identifying plants that trigger the release of our own stem cells.

So you take these plants and within an hour or two, we can see more stem cells in circulation. And even just simply doing that, and we have had a lot of cases of people being in fertility clinic because of problem with fertility and within a matter of a few months, starting to basically being able to conceive. So putting more stem cells in circulation, injection of stem cells in the bloodstream or injection of stem cells in the ovaries, all of these have been shown to have an impact on fertility.

Even when we look at just overall or morning health, I don't know how many cases I have seen over the years that of women that have reported in premenopause or in menopause to really get a lot of release with some of them I mean even led to a to a potential lawsuit a number of years ago when a woman said well I took your product that stimulates stem cell release and I had a hemorrhage so I had I was rushed at the hospital and I just could not wrap my mind around it. And at some point I said, well, could you share your medical records so we can see what it is that you're talking about? And there was absolutely no impact on red blood cell count. There's nothing that was showing anything about hemorrhage. And at some point in the conversation, she basically cut the chase and went to the point of her problem, is that she said, I've not had my periods now for at least a year and a half, and when I started to take your product, my periods resumed.

And I don't like it. I was happy, not I think my period. I'm thinking, you don't realize how your body is rejuvenating. But she didn't like that part of it. So we have seen that. I wouldn't say we have seen it a lot, but people reporting the benefit during that part of their years, their life, where they feel this rejuvenation in their body, we have had a lot of these comments. So there's definitely a link between more stem cells and circulation through releasing your own or through an injection and benefits into this phase of a woman's life when there's all this hormonal change.

Jaclyn Smeaton (36:42 - 36:55)
Yeah, I mean, you're right. Women have to deal with a lot of negative changes around the time of perimenopause and menopause. Probably losing their menses is the only positive that most women would report. So I can understand you'd get some complaints around that one.

Christian Drapeau (36:55 - 37:16)
It's not common, but I'm bringing this as just as a, I mean, it was really not common. it allows me to understand all the women that have reported benefits during their menopause, and it's just like, it's very rejuvenative. And to a point where in some women, it brought back, know, menses.

Jaclyn Smeaton (37:16- 37:30)
Well, I want to shift and talk a little bit about, because we've mentioned a few things that can increase the rate of, or increase the concentration of stem cells. You've talked about fasting. You've talked about cold shock protein. I'm guessing probably heat shock protein as well.

Christian Drapeau (37:30 - 37:34)
Probably, but I would have to dig into this one a lot. I've not seen this one as

Jaclyn Smeaton (37:34 - 37:47)
And then what else can people utilize? And I'd love to hear more about you mentioned plant medicine and plant ability to improve stem cell function and regeneration. So let's talk a little bit about that.

Christian Drapeau (37:47 - 41:40)
Okay, things that you can do to release stem cells, there is not a whole lot. So there's fasting, is meditation has been documented to put more stem cells in circulation. It was not published, but it's the work of Doris Taylor and she's a good stem cell scientist. So I don't doubt what she reported there. So meditation would put more stem cells in circulation. Severe physical activity will put more stem cells in circulation.

But to say that it's going to help in overall health and regeneration, I'm not sure. And what I mean here is that you release stem cells after strong physical or intense physical activity, probably because you created a lot of micro traumas in your tissues. It's calling for repair. So you're releasing them for repair. And if you do this over time, then there is an accumulation of micro damage and it's not uncommon for athletes to have a lot of joint issues later on in their lives. So you release stem cells for a specific application, which is to repair. So they may be used for other things, but I'm not sure if it is a longevity approach when we talk about stem cells. A hyperbaric chamber can put more stem cells in

circulation, and that's pretty much like all that we can do in terms of lifestyle to put more stem cells in circulation. My field of research, as I explained before, I got into this whole field because I was working with a plant trying to understand how it was working and we discovered that it worked as a stem cell mobilizer. This was blue green algae from Klamath Lake. But after doing this and documenting the mechanism of action, proof of concept, finding all the patents and doing all that work, then my curiosity was there must be more than one plant in the world that has an effect on stem cells. How do we find them?

So I start to ask the question, what else has been historically documented to be good for a broad spectrum of benefits? So we found a number of plants, but where we really did the biggest discoveries is when I had a chance to work with scientists working with plants in, let's call this remote areas of the world. Like you go to Madagascar. What are they using in Madagascar? They don't have access to blue green algae from climate lakes or medicinal mushroom from China. So what are they using?

And in Madagascar, of the 65 or 60-something species of aloe present in Madagascar, there's only one that they use called aloe macroclara. We developed it as a product called stem aloe. It's developed as a product in Madagascar called Vahona, which is in their local vernacular. It's the product that is sold in marketplace. And they use it for longevity to keep grandpa still working in the field past 80 years old to remove back pain. Interestingly enough, to help reverse your graying hair to its original hair color, which interestingly enough, almost all product that I documented having an effect on stem cells had historically been used for that function to help the body reverse its natural hair color. So Vaona, that's one of those stem aloe that we have documented coming from China, sea buckthorn berry.

So we connected with a farm on the Tibetan Plateau. We derived an extract and we documented that it put more stem cells in circulation. Interestingly, seabuck thornberry has been used over the past probably 2,000 years in Tibetan medicine, Mongolian medicine, Chinese medicine for problem of the lung, of the heart, arterial disease, diabetes, and to speed up recovery from burn to the skin, bone fracture, general injuries.

So that's the process through which we have identified probably like a handful of plant extract that put more stem cells in circulation within about two, three hours of consumption.

Jaclyn Smeaton (41:40 - 41:50)
That's amazing. So I do want to kind of shift gears because I think that's probably where the STEM Regen product has come into play. So I do want to allow you some time to just talk about that as well.

Christian Drapeau (41:50 - 44:40)
So stem regen is a blend of the top. So I've probably, we've studied maybe 12 to 18 of these plants over the years. And of all those plants, the top five, and also choosing with plants that have complementary mechanisms of action, then I blended those into a product called stem regen. So you take two capsules, and within about two, three hours, you will have an average of an additional 10 million stem cells in circulation.

It is an underestimate because what we calculate is the number of stem cells at a specific time point, let's say two hours after consumption, but we know that the residence time of stem cells is an average of about one hour in the bloodstream. They're released, they find a place where to go to get something to repair, or they go back to the bone marrow. So if you have 10 million additional at a time point of two hours, more have been released and have already migrated into tissues. But anyway, it's putting more stem cells in circulation and it's boosting the overall ability to repair. So we don't have any impact from a claim standpoint. We don't have an impact on heart disease, on brain health or any of these conditions. All we do, we put more stem cells in circulation, but it's the body's natural repair system. So the body utilize these stem cells for repair. So we have a number of studies now that are ongoing. One on chronic stable congestive heart failure.

As an example, where we are right now, we're working here to publish the preliminary results, but on 10 patients that have done six months, starting from stable chronic congestive heart failure, after six months, all patients in the study now have normal heart function. We have started one on Parkinson. We only have seven patients now in that study, but after six months, we have a significant reduction of motor symptoms significant improvement of sleep patterns, significant decrease of anxiety, depression, and significant increase in overall quality of life. So we'll continue, we'll try to reach the heart study, we're trying to reach probably 100 patients, Parkinson probably, I don't know, 20, 30 patients. So it's continuing, and the idea is not to show that.

Stem Regen is good for heart disease or Parkinson. We're doing one on emphysema. We're working one on liver failure or liver fibrosis, colitis. But the point is just to show, when we put more stem cells in circulation, we're simply giving back the body its natural ability to repair. The problems that you have in your 50s and 60s, you did not have them in your 20s and 30s. And one of the big reason is that you had more ability to repair you know when you were younger. So we're just giving you back this ability to repair and see what it can do for the body.

Jaclyn Smeaton (44:40 - 44:51)
Well, those are really exciting pilots, like seems like really warranting the bigger trials, because that could really be transformative. Absolutely. we those results on a broader perspective.

Christian Drapeau (44:51- 45:22)
Absolutely, and that's why we're doing these. We're doing these pilot projects to be able to show, I mean, I was not expecting that kind of data, but to get 10 patients out of 10 that have regained normal heart function, that speaks volume. Now to bring other players and investors to be able to do bigger trials, and we're doing this right now. So we're in fundraising, we should be done by the end of the month, and one of the main reasons for that fundraising is to basically fund bigger, bigger clinical.

Jaclyn Smeaton (45:22 - 46:25)
Exciting. Well, congrats on that. This has been a really fascinating conversation. It's really, think, you know, as a naturopathic doctor, we have these principles of naturopathic medicine, and one of them is that it's the healing power of nature. And we kind of think about that in two different ways. One is what you described. If you cut your finger, you know, your body pursues repair and homeostasis. So it's that innate ability to heal that humans have and kind of recognizing that and thinking about how we can support that in our treatments. And then the other piece of it is the healing power of nature. When we look outside of our individual bodies of plant medicine and sunlight and all of the things that we can do to interact with nature to heal ourselves. And so there's this kind of duality and what's really come together for me in our conversation is the way that you've pulled both aspects of that together into this approach and really filling that black hole like you described. So thank you. I've really, really enjoyed this conversation and the time we've had together and how much I've learned.

Christian Drapeau (46:25 - 47:16)
You know, it's interesting because what you just summarized them is the heart of everything that we've talked about. The science that the body has an innate ability to repair is naturopathy. It's been around for a long time. We know it, we worked with it, you work with it, but until recently we did not have.

We did not know what it meant in the body from a mechanism standpoint. So the only thing that we're adding on everything that you already know is that now there is a unit in the body that is actually doing this work of repair and it's your stem cells. And we could eventually go deeper in that discussion and brainstorm about everything that you do as a naturopathic doctor to help patients, help people heal faster, heal better. And I bet you every single one of them is at least in part it's because it's leveraging stem cell function in the body.

Jaclyn Smeaton (47:16 – 47:55)
Yeah, absolutely. Well, thank you so much for your time today. And if you guys want to learn more about Christian's work, we will link in the show notes to the resources that you can use to check him out further and check out the research that he has shared with us today. If you are interested in listening to more awesome content on hormones and functional health, functional medicine, I definitely encourage you to join us as well at the Dutch podcast. If you subscribe, we release a podcast every Tuesday. So follow us on social media, subscribe wherever you listen to podcasts and tune in and I look forward to having you join me next week. Thanks so much. Have a good day.