The Fourth Phase of Water for Optimum Health

Guest: Prof. Gerald Pollack

Niki Gratrix Hi, everyone, this is Niki Gratrix. Welcome. Today I have the great privilege of introducing another very distinguished guest, Professor Gerald Pollack, a world-leading expert on the subject of water. Professor Pollack has a degree in electrical engineering and obtained his PhD in biomedical engineering from the University of Pennsylvania in 1968.

He's currently the professor of bioengineering at University of Washington and is the Founding Editor-in-Chief of the leading journal *Water*, a multidisciplinary research journal. He's also the convener of the annual conference on the physics, chemistry, and biology of water and is the Executive Director of the Institute for Venture Science.

Professor Pollack is a founding member of the American Institute of Medical and Biological Engineering and a fellow of both the American Heart Association and the Biomedical Engineering Society.

He has over 300 scientific studies published in peer-reviewed science journals and is an author of 8 books. His interests have ranged broadly from biological motion and cell biology to the interaction of biological surfaces with aqueous solutions. His newest book, *The Fourth Phase of Water: Beyond Solid, Liquid, and Vapor*, won the distinguished award from the Society for Technical Communication and went on to receive the World Summit Excellence Award.

Professor Pollack has received numerous awards and distinctions, too many to mention here. But some include recently being named an honorary professor of the Russian Academy of Sciences. He's receive distinguished letter awards from both the Biomedical Engineering Society and the University of Washington. And in 2014, he received the Scientific Excellence Award from the World Academy of Neural Therapy as well as The Society for Exploration's Dinsdale Prize. So, thank you so much, Professor Pollack, for joining us on the summit today and a very warm welcome to you.

Professor Pollack Oh, thanks so much, Niki.

Niki Gratrix So, Professor, I think that most people think scientists have understood everything there is to know about water given that it's everywhere on the planet and most of us know our bodies are made of water molecules mostly. I think your research seems to show that the opposite is true, that we are pretty clueless about water. And really this is one of the most important topics we could have included on the summit. So would you like to share what the fourth phase of water is and what your research has found?

Professor Pollack Sure, I'm happy to do that, just in terms of what's known and what's not known about water. As you say, most of us think that water is the simplest substance

and the most abundant on the face of the earth. So we kind of think that we know everything. But if you just look up sometimes at a cloud and think about it, clouds are suspended up there. We see them all the time. And sometimes you can see a sole cloud just hovering up there.

And when you think about it, the clouds are made of little droplets. Droplets are heavier than air. They should fall down like a bucket of water. But they don't. They stay up there. Nobody knows exactly why. I think we're beginning to understand why, but this is one of those fundamental and basic questions involving water that you see every day, but you don't really understand.

So we began studying water seriously about a decade ago. And we found that water…We grow up learning that water has three phases: solid, liquid, and vapor. We found a fourth phase. And this fourth phase is somewhere in between a solid and a liquid. And I must say this is not really an original finding.

One hundred years ago, there was a famous physical chemist who came to the conclusion that there had to be four phases, not three phases, because you simply couldn't understand all there was to understand about water unless you introduced this fourth phase. And the idea was this is a kind of phase where the molecules were ordered in some way like something like a liquid crystal.

And throughout the century, a lot of people alluded to the possibility of that. But we found it experimentally. We found that when water meets an interface—an interface meaning some solid that is so-called hydrophilic or water-loving—if it were sitting beneath you and you dropped a droplet on it, the droplet would spread out instead of balling up like a hydrophobic surface. And most of the surfaces are hydrophilic.
So what we discovered, what we found is that when water meets one of those hydrophilic surfaces, it changes monumentally. It no longer looks anything like water. It has completely different physical/chemical properties. And those properties occur not just in a single molecular layer that's right next to the hydrophilic surface, but it actually projects out many, many, many layers. And we're talking millions of layers, not one or two. We're talking macroscopic dimensions. So this is what we call the fourth phase because it's not a solid. It's not a liquid. It has a consistency perhaps something like honey, if you will, a raw egg white.

There are a few really interesting properties of this. The first is that, to our surprise, we found that this zone of water that undergoes this complete reorganization that it's actually charged. It's not neutral. We drink a glass of water, and it's neutral. But this region of water or this phase of water that sits next to the hydrophilic surface, it's actually negatively charged. And not surprisingly, the water sitting next to it, the ordinary H_2O is positively charged.

So what's going on is that the water molecules, the original water molecules, when they're exposed to one of these hydrophilic surfaces, the molecules actually spread into the negative part and the positive part. And the negative part organizes itself next to the hydrophilic surface. And that's the fourth phase or what we call the EZ or exclusion zone. I guess you'd call it E "zed" where you are. But it's easy to remember.
And the reason that we call it exclusion zone is because of its ordered structure, it's just like a crystal. And crystals exclude virtually everything. For example, ice crystals they're pure. Anything that's in the way as these crystals form get excluded. And it's the same with this exclusion zone or EZ or fourth phase.

So we have a situation where the water meets the surface. And it reorganizes into the negative component, which is the EZ and the positive component beyond. It's like a battery. In fact, you can put an electrode in the negative part and one in the positive part and draw current from it and actually get power out of this.

We actually have a patent application that has been allowed. And it's just essentially in progress of being proved. Since you have a battery, the question arises, well, if you have a cell phone battery, in order to recharge it, you plug it into the mains. But there's no mains to plug this into. So where on earth does the energy come from to build this battery or even to create the order that's in the exclusion zone?

And the surprise is that it comes from light. It took us a few years—stupid as we are—it took us a few years to figure out that it comes from light. And the way we found out is that a student in the laboratory took a lamp, an ordinary lamp sitting around on the bench, and shined it on the experimental chamber where we could see this exclusion zone. And voila! When he shined it, the exclusion zone grew enormously. And when he took it away, the exclusion zone or fourth phase retracted back to its original size.

So it didn't take a rocket scientist to figure out that, hey, photons, light energy, is the source of the energy that's building this zone. So these findings are, I would never have predicted anything like this, but I think it's remarkable that we're actually taking the energy from the environment, the light energy—not we're taking it; the water is taking it—the water absorbs this energy. And this energy is responsible for creating basically this fourth phase of water. And the more light you have, the bigger the fourth phase.

I should point out just one more thing—I know you've got a lot of questions—that it's not visible light mostly that when we think of light, we think of a red through violet and all the visible colors. And they actually do build the exclusion zone but much more powerful is infrared light.

Now, a lot of people don't know where does infrared light come from? And we think of the toaster or we think of the oven glowing red. And that produces heat or infrared light and such. But actually it comes from everywhere. If you were to darken your room, close the shades, turn off the lights, and then whip out your infrared camera, which gets an image based on infrared light rather than visible light as most cameras do, you get a beautiful image in total darkness.

And that means that everything is radiating infrared light, everything. It's energy that comes free, literally free, from the environment. It's there all the time. It's even hard to get rid of it. So because that energy is there all the time, it means that fourth phase is there all the time. And so throughout nature, and including our bodies especially, nature is filled with fourth phase water. And if you really want to understand water, you need to understand that there is not three phases, but four phases. Hope that answers your question?

Niki Gratrix Yeah, that was exceedingly clear. That was fantastic. And it's amazing and revolutionary. It's astounding to hear you explain it. And obviously it's not been accepted conventionally for many years, but is it getting acceptance now and what have been some of the controversies to do with water in the past that's caused the research to falter?

Professor Pollack Yeah, well, I mean there's a tendency, of course, to answer the first question. Is it accepted? It kind of depends on the group. And this goes back to ordinary

science. And when you have a brand new finding that challenges convention, you can pretty much expect what happens is that people who are deeply enmeshed in the conventional wisdom are reluctant to even consider it.

It's not really that they've taken this and said, "Oh, it's absolutely, positively nonsense and wrong." There's been a little bit of that, but surprisingly little. On the other hand, the acceptance among so many groups has been just phenomenal from people doing water filtration especially to health, all kinds of alternative health and energy production. And so many people have developed huge interest.

Actually, to tell you the truth, it's hard for me to respond to the emails. I try to respond to all the emails, but it's getting to the point of impossibility. The interest in this is exceptional all over the world. And the book that describes the fourth phase that you mentioned, it's now getting translated into several different languages. The German edition is in its second printing already. So it's getting very popular.

But one of the problems is that water occupies, you might say a special position in science. Water is one of the subjects, as you mentioned when you opened, that we think a lot of people think that everything there is to know about water is known because it's just so common on the planet. And when people in the past have introduced new findings that challenge the conventional view that everybody presumes is well-accepted and proven, the science goes crazy.

There were two incidents—I'll just tell you about them—that caused real problems in water research. So sixty, seventy, eighty years ago water was a relevant topic to study. A lot of people understood including Nobel Prize winners that water was so central for everything on the face of the earth starting with health to chemistry and physics and what have you.

However, there were two debacles that took place in water research that threw the whole thing out of kilter. They made it dangerous for scientists to immerse themselves in water studies, so to speak. Let me just mention these two because they're interesting stories.

The first one came out of Russia. It was around 1970 or so at the height of the Cold War. So people throughout the West presumed that, we were taught that, the Russians were incompetent and evil, the Soviets I should say, and they couldn't do anything right. And, of course, the truth is the opposite of that.

And perhaps the most famous Russian physical chemists, Boris Deryagin, found something interesting. He found that if you put water into a very thin capillary tube and let it sit there for a while, the properties of that water would change remarkably. You'll notice a resemblance to what I said about the fourth phase of water. And they found that this water you could hardly vaporize the water. You could hardly freeze the water. You'd have to bring it down to very low temperatures in order to achieve that.

And the absorption properties of different wavelengths also differed from those of ordinary water so they thought they had something pretty interesting. And after three or four years when the translations from Russian language finally got to the West, a lot of people were kind of stunned by it. And people in England and U.S. and Australia began studying it.

And a lot of the people got seriously interested because it looked like another form of water. It's hugely exciting. And a lot of research began in earnest. But some people were skeptical because it's the Russians. It's our enemy. And, "They don't know anything. So we're going to prove them wrong."

So one scientist found that if they put water into a thin capillary tube, water that was supposedly pure, what happened is that the water was no longer pure. It actually leached some of the silica from the capillary tube so it was more like a silica gel even though there were very few silica molecules inside the water. But they criticized the Russians for claiming that the water was pure when the water was really impure. And that was a serious blow.

But what was even worse were some scientists, maybe they were from England or Australia I can't remember. But they took some water and they put salt in the water. And they measured the absorption spectra, which the Russians had measured in the water in these capillary. And they found a real similarity between what they measured in salt water and what the Russians measured in supposedly pure water. And they claimed the well, obviously, the Russians must have been sweating into their water, and they screwed it up.

So big joke, but it was a serious blow to Russian science. And it was difficult for the Russians because they were trying to establish a foothold in international science and especially in the West. And it was really embarrassing that the most famous Russian physical chemist could screw up so badly.

And then Deryagin himself recanted. He said, "Well, you know, it looks like you guys are all right, and I was wrong." And that sealed the coffin of so-called polywater, which it was named. And everything seemed okay except for a couple of things. First of all, I found out from someone who was his last post-doc before he died or last student, I forget which. And she told me that until the day he died, he was sure that he was right. And I heard the same from another very famous scientist who had coffee and vodka with him three times a week. And he was sure he was right. And he was forced to recant by the Soviet government because they were embarrassed. And it's easy to put the blame on him instead of on the Russian government.

And that was a sad blow for this guy and also for science because the criticism was really not appropriate. And it had a serious impact. I mean appropriate because, okay, so his water was not pure. But still no water is really pure, it showed these enormously interesting effects. And all this was put down, and it was called a polywater debacle.

And what it meant was that in the early 1970s was that any scientist who was stupid enough to want to study water better be careful because if the most famous Russian physical chemist could screw up so badly by sweating into his water, then what about the rest of the mortals like us?

Yeah, it put a really serious damper on anyone who wanted to study water because people would look askant at them, "You found *WHAT*? Oh, probably it's similar to polywater. It's nonsense." And so a lot of people stopped studying water.
And then about twenty years later, the same thing repeated itself but only worse. It was a French scientist, Jacques Benveniste, who found that there could actually be information stored in water. And this cost him his career. He was a famous immunologist. And after this debacle, twenty years after the polywater debacle, it became even more diffi-

cult for anybody to study water. Do we have a few minutes that I can tell the story of this French guy, or do you want to get on to something else?

Niki Gratrix Briefly just if you could explain a little of what he found because that's obviously linked to what I'll ask you about later, as well.

Professor Pollack Yeah, okay. So he was studying cells and the secretion of some substance. Histamine, I believe it was. And he put some antibodies on these cells, and they would secrete this substance. And someone came to his lab and said, "Hey, I can get the same result if instead of taking the original if I took it and diluted it and diluted it and diluted it," the same way that homeopaths do.

And you could dilute it ten times for each dilution and still essentially get the same results. And, of course, this seemed preposterous to anybody because if you dilute and dilute, then there's nothing left but water. And yet this water could produce the same effect as the original substance. He said, "Well, it looks as though the water has some memory or information from the molecules to which it was exposed."

Anyway, this caused a real—to keep it brief—*Nature* would simply not accept it time and again even though other labs could repeat the same thing. And finally under pressure from the homeopaths, the *Nature* journal agreed to publish it on one condition that they send a committee of peers to look over the shoulders of the French investigators. They came. A month later they did.

And they concluded that it was some kind of trick even though the…I should say the committee consisted of the editor of *Nature*, the world's most famous magician, the amazing Ramby, and a frog buster from the National Institutes of Health in the U.S. obviously, they were thinking it was going to be a trick. And although the French investigators could repeat it in front of them two times, when they themselves tried to do it, they got an ambiguous result. So they went home and said, "This was a trick." And so he lost his career on the base of that.

Many people have repeated this experiment. And so there's no doubt that it's real. But to most of the world, polywater and then water memory are absurd. And they leave a legacy. And the legacy is that anybody stupid enough or foolish enough to study water better be really, really careful because we're going to be totally skeptical about any kind of finding that's out of the ordinary. So it's a problem. Anyway, I hope that answers your question.

Niki Gratrix Yes, that was fantastic and very interesting, extremely interesting. So we'll come back to that a little bit more later, as well. But I wanted to obviously focus on this special fourth phase of water you call EZ water and the implications for health because one of the things that I've noticed is that in health we're obsessed with looking at cells and tissues and organs and so on in medicine and even in nutrition and all those kinds of things.

And we often ignore the environment that they exist in, so the properties of the extracellular matrix, interstitial fluids, intercellular fluids and so on. And even more so we ignore the electrical aspects of these fluids. They seem to be downplayed and ignored. So would you like to share some of how EZ water is affecting human biology and why this is so important for health?

Professor Pollack Yeah, yeah, yeah so you're so right. We often focus on the food that

we eat. But we never really think a whole lot about the water that we drink. So most people understand that we've got a lot of water in our body, two-thirds by volume. And in fact if you count instead of volume, if you count by the fraction of our molecules that are water molecules, if you do the arithmetic, because the water molecule is so small, to fill that two-thirds volume, you need a lot of water molecules, a lot of these small molecules. It turns out that more than 99% of our molecules are water molecules. So whether the water molecules are liquid or EZ makes a big difference.

Fourth phase makes a big difference because if you want to understand what's going on, you have to know what's inside your body. You have to know something about the 99% of the molecules that are in your body. Well, it turns out that most of those molecules are not H_2O. The EZ or fourth phase water. And the reason that's so is that if you look inside the cell or even as you say in the extracellular matrix, almost all of the water is near a hydrophlic interface. Therefore almost all of the water is going to be EZ water.

And so with that information, you can begin to think in terms of a new framework because if most of the water is EZ water then, hey, EZ water is negatively charged and therefore your cells should be negatively charged if they're filled with this stuff. And indeed it's been known for sixty years, if you stick an electrode into any cell, you measure a negative electrical potential.

And the same thing outside the cell with, for example, extracellular matrix, connective tissue, they're hydrophilic proteins like collagen elastin which have been shown to have an ordered water around them. That's EZ water. So most of the stuff inside your body, not all, most of it, will be negatively charged EZ water.

And so it turns out if you look at the studies that have been conducted that when the cell is very negative, it's full of EZ water, I should say parenthetically that the conventional interpretation of the negative charge is completely different from what I'm suggesting. I won't take the time to go into it, but I think that the correct interpretation is the simple one that I'm suggesting.

Well, it turns out that the cells that are really fully negative and therefore full of this EZ water, function quite well. Cells that are not functioning well like cancer cells or pathological kidney cells, their electrical potential instead of negative eighty or ninety millivolts is negative fifteen or twenty millivolts. Not as negative as the healthy cells. So one of the first things, one of the measures of health should be, and I believe it is, a very high negative, a substantial negative electrical potential. We actually measure the electrical potential of people.

And I just learned at a conference in Estonia last week that there are actually instruments that you can buy to measure the body's negative electrical potential. We just did it just for fun, but it exists professionally. And indeed the people who are more negative, so to speak, are the healthier ones. And so this is really interesting.

So that the presence of EZ, fourth phase, water in your body has huge implications. And one of it is for function. You really need this EZ water and the negative charge that goes with it. You need this in your cells because every protein, your cells function because the proteins do something. They bend, they twist, they contract, whatever.

But their ordinary, natural state is the protein surrounded by fourth phase water. And if you don't have enough of that fourth phase water, then the protein is surrounded by

something that's unnatural. It can't do what it's supposed to do. It can't fold the way it's supposed to fold. So your cell is sick.

And in order to restore the cell, you need to go back to increase the amount of EZ water that's in your cells. So this is kind of a new approach although it's not a new approach. It's 6,000 years old. We just have forgotten about it. The water is absolutely critical for good health.

Niki Gratrix Could the EZ water affect, for example, how toxins and nutrients get inside and outside of cells, the flow as well? Is that one implication?

Professor Pollack Yeah. Well, flow is really important. And we found (how to put this?) first of all I should say, it's not that every molecule of water in your body is EZ water. There's also the positively charged water. And nature tries to get rid of the positive and maintain the negative. And this doesn't quite answer your question, but I'll get to that in a moment.

When you breathe out, for example, you breathe out water vapor and carbon dioxide. Together that's carbonic acid. It's just filled with protons. Every time you breathe out, you get rid of positive charge. And that helps you to maintain the negative charge, which you really need. But that positive charge and that outflow of positive charge from your body is integrally tied to flows that you just mentioned.

So we found in the laboratory—and this has application to the body—we found that if we took a tube, like a straw made of some hydrophilic material, and we just dunk it into a bath of water, this was a real surprise to me, one of the students came running in and I almost fell out of my chair when he showed me. What happens is you get constant flow through the tube. It just doesn't stop. It just goes on and on.

And we know that if you have a tube and water inside, in order to create flow you need a pressure to push it through the tube. It's like your arteries. The heart pushes it through, otherwise it wouldn't flow. You need some energy to do that. So this convinced us that the energy source is the radiant energy or infrared light or electromagnetic energy that's coming and getting absorbed by the water. That's the energy that's driving this flow.

So we thought…The same thing happens in your body. So we have blood flow. And it's pretty clear that in the large vessels, it really is the heart that's driving pressure, driving the fluid, driving the blood through your large vessels. But when you get to the small vessels, there's a problem. And I think this is where these EZ water and charge separation comes into play.

So when you get to the small vessels, the capillaries. The capillaries can actually be smaller than the red blood cells that have to pass through those capillaries. So the red blood cells are six or seven micrometers in diameter, but the capillaries are only sometimes four or five micrometers. And so you know it's kind of like having a toilet and the outflow pipe is smaller than the stuff that has to go through it. Then the plunger comes in handy.

But you've got the same problem that exists in the capillaries. And so for the little red cells to work their way through, they have to bend and contort. And there's a lot of evidence for that. There's some videos that I often show that actually show the red blood cells getting squeezed through those capillaries. But this requires a lot of energy.

And my Russian colleagues have calculated that if the heart were entirely responsible for driving those cells through those tiny capillaries, it would need to develop a pressure like a million times higher than the pressure than it actually develops. So obviously unless they're absolutely wrong, the heart requires some kind of assist to get those red blood cells through those tiny capillaries.

And so we thought, "Hey, what about light?" because we found that, I mentioned, that we can immerse these hydrophilic tubes into water. And we get spontaneous flow. And we know that that's driven by light. In fact, if we add more light, we get faster flow. So we had the idea and still have the idea, and we're testing it right now, that in your capillaries, it's not the heart that's chiefly responsible for driving your blood through the capillaries. It's light.

It's the light that you absorb. It's infrared light and maybe other wavelengths too. We're checking this out, and maybe the heat from metabolic energy. But it's that that's responsible for, we think, for driving the flow through those capillaries. So again, this water and the charge separation and the light, enormous implication for health.

Niki Gratrix Yeah, that is profound. So literally, if we're low in this EZ water, if we're lacking it, then we're talking about hypertension, the potential for high blood pressure, things like this because the flow isn't there. We're talking about toxins building up inside of cells potentially just without the flow. It's really profound.

Professor Pollack Yeah, it's not only flow in capillaries. It's also the lymphatic system. Nobody understands. It's basically another system of circulation, and nobody understands the driving force. People presume that it must have something to do with muscles that contract and push the flow through the lymphatic vessels.

But this is a really kind of obvious impact of light. And a lot of light is absorbed in your body in many different wavelengths. And so if we see it in a laboratory, there's a good chance that it works also in your body.

And you mentioned the toxins. And we've begun studying toxins. We don't have anything conclusive yet. But a hypothesis is that the toxins wipe out the fourth phase water. We have some preliminary evidence on that. And if they wipe out the fourth phase water, then effectively you can't function anymore. And that may be the way that poisons work.

And we found actually just the opposite with agents that help your health. So, for example, aspirin. Aspirin is a natural product, and it's good for relieving pain, relieving headache, or reducing swelling, even evidence that it's good for your heart.
And I read recently of a Harvard group that studied breast cancer, and the women who were diagnosed with breast cancer took one aspirin a day. Their survival rate was much higher than those who didn't. So aspirin does something generally that generally improves your function. So when you think of a mechanism, how can something be so general? How can it improve so many things? What's pervasive throughout the body? Well, that's water, right?

And so we took a look at aspirin and also Tylenol which is similar. And we found something remarkable that if we expose the EZ water to concentrations of aspirin that the EZ size grew by up to a factor of three. So aspirin appears to increase the amount of fourth phase water. And I think that's the reason that it brings us back to health.

Niki Gratrix Wow! That's amazing, isn't it? Very interesting. It's profound.

Professor Pollack It's a new approach or new view, as I say, really an old view about health.

Niki Gratrix Yes, it's so interesting. And just the thought that light could be a key thing for detoxification and lymph flow. That's profound.

So I'll just briefly mention here that there's some practitioners that have trained in bioterrain analysis and it came from the French hydrologist Louis Claude Vincent who was looking apparently at French cities and found that some cancer rates were higher in some areas than others. And he found that it was down to the water that they drank.

And then he started to look at testing human fluids—urine, saliva, and blood—for things like pH, ORP which is oxidation reduction potential resistance and things like this. And he's part of a number of people who research this who have done that kind of work. And it seems now, based on what you're saying, that there's definitely something to this.

Professor Pollack Oh, yeah. I have heard about that or read about that, although I'm kind of certainly not an expert in what he found, but I remember being really impressed by what I read.

So water is not simply water. And the fourth phase is such an important aspect of it. And every water that you drink contains some fourth phase, maybe a trivial amount, maybe a large amount. And the fourth phase itself also may contain information and some of that information may be good for your health. By information I mean a kind of structural difference. The fourth phase is kind of almost the structure that we've come to understand for the fourth phase is almost solid like. It's a bit like ice, but it's not ice.

In fact, we've found that if you freeze water, you start with ordinary water, then the fourth phase and then ice. And when you thaw it, you go from ice to the fourth phase to ordinary water. But this fourth phase has a structure to it, a definite structure. And that structure contains oxygens that are located at regular, discrete points. And so they form points in a three-dimensional array.

And when you think about it, it's not so different from a computer memory. Computer memory, you've got silicon dioxide atoms that form a three-dimensional array. And you know your thumb drive is basically it's that. It's just a collection of these atoms. And the atoms can either have a one state or another, zero or one, so to speak.

And the fourth phase of water is very similar to that. So the oxygens that are regularly arrayed can have different states depending on the charge of the particular oxygen atom. So there's a huge potential for EZ water to store information.
It gets back to the French scientist I was talking about, the late Jacques Benveniste who didn't understand what was going on. But there was clearly evidence for memory. And there's a lot of that. I organize meetings annually on the physics, chemistry, and biology of water. And every time I'm at each year multiple presenters present their evidence for this.

So the kind of water that you drink, water is not water. It's simply not bland, plain H_2O. It's a complex fluid that contains not only H_2O, but also EZ water in varying amounts and possibly with varying kinds of information stored in that EZ water. It's entirely possible that that information can be constructive or in some cases destructive.

And then I think that the scientists we're talking about he had the empirical evidence. And I think it would be really interesting to go back and take some of those waters and actually study them and see what kinds of information is implanted in those water. It could be really revealing. It's a good, very interesting topic.

Niki Gratrix Yes, definitely. So share with us the ways that we can increase EZ water. How do we do it?

Professor Pollack Well, I think so. I was just in Finland last week. And practically every Finnish home has a sauna. And they do it on a regular basis. They go in and immerse themselves for thirty minutes or twenty minutes and then jump into cold water.

And the question is, well, why do you feel so good afterwards? I've had the experience myself although I don't do it regularly. And on my previous trip to Finland, going into the sauna, it was late in the evening. It was a large group and party. And everybody was tired and waiting to go back to the hotel.

And they said, "Okay, it's now time for the sauna." And there were three different varieties. And we all dispersed and went into them. And after twenty minutes, I came out and it was like I had had a full night's sleep. And I felt vibrant and full of energy and just ready to go and conquer the world. I couldn't believe how good I felt.

And so what's the reason? Well, I think the reason is not so complicated. It's not a, you might say, a psychological reason. It's that the sauna is warm. It generates a lot of infrared. Infrared builds fourth phase water. We need this fourth phase water to function properly and well. And so you come out of there, and you're full of EZ water.

And therefore every cell in your body including your muscles and your brain and what have you, they all are back to full functioning. So I think the Finns have discovered something. Of course, the Russians do it too. They call it banya instead of sauna. So I think that's one way to increase your EZ water.

And of course sunlight, you think of sunlight. The Scandinavians way up there, they don't get too much sunlight. And a lot of them get depressed. A simple therapy for that is to take a trip to the Mediterranean for a few weeks and expose yourself to a lot more sunlight because then you, again, get these photons that build the EZ water.

There's another approach, if you connect yourself to the earth. So this is old and new. Everybody has had the experience of walking barefoot on the sand near the water or going swimming in the ocean. It feels good. I remember as a kid growing up in New York City, there were quite a few beaches, surprisingly. You don't think of New York. But we used to go there in the summertime.

And as kids we would bury one another. The only thing that stuck up from the earth is your head. And you're basically buried in the sand. And somehow I remember that it felt so good that I simply didn't want to get unburied. It was such a powerful experience that I remember it to this day. Of course, I had no idea why I was feeling so good or why people feel good walking barefoot on the beach. Now it's clear.

The earth…This is new to me. I found out only six or seven years ago. The earth is negatively charged. Now, I studied electrical engineering and if someone had told me that the

earth is not neutral, it's actually negatively charged, you could have knocked me over with a feather. When I heard it for the first time, I couldn't believe it.

And then one of my graduate students showed me fine lens lectures and there it was, volume two, chapter nine, the earth is negatively charged. Now, the reason for the negative charge is not so clear although I think we have some idea. But it's definitely negatively charged.

And so if you connect yourself to the earth, you're connecting yourself to a vast source of negative charge, of electrons. Those electrons flow into your body, and they can restore the negative charge that you need for proper function and probably builds EZ water. But it certainly produces the charge that you need to function.

So there is some products that are produced. Well, my son who illustrated my book, he has a sheet, a bed sheet that he got that's connected to the earth and it really improves his sleeping. It seems that it improves practically everything. So this has been studied by biophysicists. It's pretty clear that it has a positive effect. And probably it also builds EZ water.

Then there's juicing. And probably a lot of your listeners already do this. You take some fruit juice or vegetable juice, kale, and you squeeze out the pulp, chop out the pulp, and you have the juice left over. Well, what's the juice? It's actually the water inside the plant cells. It's EZ water. Your cells contain EZ water. If you don't have enough, you drink this stuff. And it basically fills up your cells. And it replaces what's missing.

And so various medical practitioners, alternative, I should say, medical practitioners, say no matter what the patient's problem, the first thing they tell them is to juice. And a lot of people are doing it more and more. And I think the reason it's so good is that it gives you EZ water.

And then also a lot people are into vortexing water. This came from Victor Shallberger, who is a pioneer and a naturalist who studied water and the properties. And he is always talking about vortices that form naturally in rivers. You can see them when the water hits a rock and it starts spinning around into a vortex.

And he was sure that this vortex water was special. He called it living water as opposed to stagnant water, which he called dead water. And so people have begun studying vortex water now. We started ourselves. And our own evidence is not yet clear. It's not so easy to study. But there's indirect evidence suggesting that this vortex water might actually be EZ water. So you drink this stuff, it might actually help to restore your water. So these are a few ways in which you can help yourself by rebuilding.

And then also I must tell you. I was just in Estonia. And I went to the International Light Association. And I was one of the major speakers there and presented the evidence that light has an effect on the water. And they were astounded because light therapy is becoming increasingly popular. It seems to work on anything from depression to muscle pains. You expose yourself to different wavelengths of light. And it seems to be effective. What I found out was that this is not new. It was known for maybe six or seven or eight thousand years starting with the Ayurvedic culture in India and going to China. And we're just beginning to rediscover the effects, the positive effects, of light. And I think the effects might be mediated mainly through the water. You shine the light the right wavelength. And the water absorbed it and converts to EZ water and makes you healthy. So those are a few of the ways.

I might just add one more, if I may, hyperbaric oxygen therapy. So this was used originally many years ago to cure heal wounds that wouldn't otherwise heal. So the patient goes into this tube and is fed oxygen under high pressure. So right now people have done studies to show that it's not just wound healing. But it has some thirty different positive effects on your body if you just get into this chamber. And nobody really can understand why it has these effects.

But I think we have evidence for the reason. Of course, I'm going to say it builds EZ water. And so what we found is we studied both pressure (hyperbaric) and we studied oxygen (it has high oxygen). Both of those build EZ water. The oxygen builds EZ water because EZ water has relatively more oxygen than H_2O and so if you start with H_2O and you pump it was oxygen, you get EZ water. That's pretty easy.
Also, the EZ water is denser than H_2O so if you take H_2O and you squeeze it with pressure, you get EZ water. So when you combine the two—pressure and oxygen—it has a powerful effect on building EZ water.

So anyway there are a whole bunch of different ways to increase the EZ water and increase your health. And I think these are really powerful, most of them quite natural and powerful. And most of us tend to focus on taking drugs. Our physicians tell us, "Well, you have this problem, take this drug. And if you have this side effect, take that drug to counteract the side effect." But this is a completely different approach that's so natural and so easy and so effective.

Niki Gratrix Absolutely. I couldn't agree more with that. How about things that may reduce it? So you mentioned some toxins there. I was wondering about wi-fi as well.

Professor Pollack Yeah, wi-fi is good. So I've been thinking about that a lot and speaking to various people. The guy in the next laboratory to mine is about to retire. And he is studying the effects of electromagnetic noise, so to speak, pollution. There's a lot of literature on cells.

And his opinion is that wi-fi and cell phones, something within ten years, it will be known that these effects are pretty much the same as cigarettes known today. But of course there are commercial enterprises that benefit from the studies. And I think you'll find that most of the studies of the effect, for example, of cell phones on health, if they're funded by the cell phone companies like 95% of them report no problem at all.

Niki Gratrix Yeah, no shock. It's bad.

Professor Pollack The ones that are funded by foundations, 95% of them report real problems. One thing that struck me is that a colleague of mine mentioned that he studies noise. So any kind of electrical circuit has little fluctuations and noise. And over the period of ten years, that background noise in electrical circuits has increased by a factor of ten. You can't get rid of that noise. It's all around you.

So we're surrounded by this kind of electromagnetic pollution. And there's a tendency for various interests to not want to conduct studies on these. And we know that there's some effects. For example, I had a student in the laboratory. This is wonderful student from China. And she was studying some feature of water. And so we had a little chamber. It contained water and tiny particles. We call them microspheres.

And she put two electrodes outside the chamber- one behind it and one in front of it. And one of them was negatively charged; the other was positively charged. So it created an electric field between negative and positive. And right in the middle of that electric field were all those particles. And we expected the particles would move either toward the negative electrode or to the positive electrode. We weren't sure which one. But it was clear they had to move toward one of those.

And she said, "Well, no, they didn't move that way. They actually moved to the left or the right." And I said, "Oh, come on. You've got to be crazy. This is impossible. It can't be." So I sent her back to the lab. And she did some studies. And she came back to my office with a kind of embarrassing smirk on her face.

And she said, "Well, my computer was sitting right next to the chamber on the side of it. And when I turned off the computer and unplugged it, then, you're right, the particles moved either to the positive or negative electrode. But when I turned the computer on, they all moved toward the computer." So it seems that the electromagnetic energy coming from the computer would draw those particles toward the computer.

So this is really revealing because right now I have a laptop as I'm speaking with you. I have a laptop sitting on my lap. And who knows what impact this computer has on my being? So I think you really brought up a subject, a really serious issue that deserves needed attention. And, unfortunately, the funding agencies that would tend to fund science and that are not really set up to fund this kind of research. It's extremely important. It's a good point that you bring up.

Nicki Gratrix So I can't let you go until we just ask these last few questions just to do this work, this kind of somewhat infamous work from Dr. Luke Montagnier who as some people may know he was the Nobel Prize winner, recent winner, for discovering HIV.

And he did these extraordinary experiments showing that water could actually contain information. And it can transport information, exactly what you were previously talking about. And that research was received very badly by the rest of the research community. But I heard recently that Dr. Rollin McCraty said that even last year, eleven labs had successfully repeated the experiment. I just wondered what your view on that was and where it's at right now.

Professor Pollack I didn't know that eleven labs had reproduced it. I knew that at least as of a couple of years ago a couple of Italian labs had reproduced it. So it's news to me. Yeah, I also heard a colleague of mine who's a Nobel laureate told me, you know the Nobel laureates get together in Germany at a place called Lindau each year. And some of the brightest post-doctoral students and graduate students get to rub shoulders with all the Nobel laureates who are there. It's kind of a nice experience.

And so Luke presented. He comes to our meeting each year by the way, our water conference to make his presentation. But this Nobel laureate was telling me that when Luke presented it, there was a lot of antagonism from all the other Nobel laureates who thought this is pseudo-science if anything. And it was not well received.

So for those who don't know about it, what he's suggesting is that various chemicals and the water surrounding the chemicals can produce electromagnetic information that can be received by water and used in some way. So of course because of the debacle, the water memory debacle, it seems preposterous to almost anybody.

And so more specifically what he does is he takes DNA in water, and he takes it's a short strand of maybe 100 base pairs of DNA. And he puts it in a vial. It's completely sealed. And next to it is a vial of water that's completely sealed. So there's no possible communication between the two except by electromagnetic waves that may come out of the DNA or around out of the water that surrounds the DNA. That's what Luke thinks, out of that.

And then that information is stored in the water. So then he takes, he throws away the original DNA, and you have the water. And out of this water which he implicitly claims that contains information, he takes this informed water, so to speak. And he combines it with all the raw materials that you need to create new DNA and mixes the two together.

And voila! You get new DNA, and the new DNA has the same sequence as the original DNA that sat next to the water he used to make it. So somehow the information from the original DNA has gotten transferred through the water into the new DNA. And this is (if true) remarkable. And it looks as though from the people who have repeated these experiments that it's very interesting.

If you accept the fact that you said a bunch of laboratories that have repeated this, and if they got the same result, you must absolutely take it seriously. We have a tendency, something we can't understand, we dismiss, right, because it doesn't feel good if we can't understand it. And this falls exactly into this category.

However, my own opinion is that this EZ water does have the capability as I explained a moment ago, at least theoretically, it has the capability of storing information just like a computer memory has the capability of storing information. And I think this might turn out to be the vehicle that's responsible for storing the information. How exactly it works is, of course, remains to be researched. But it's an important thing to be researched.

And so I give Luke Montagnier great credit for pursuing this doggedly in the face of huge opposition from the establishment, and particularly Nobel laureates who most of whom, not all certainly, who are really the representatives of the establishment science who have done the most to promote various ideas. But Luke is a rebel, and his stuff is revolutionary. So we'll see how it turns out. I feel increasingly optimistic about it.

Niki Gratrix Yes, me too. I suppose that directly links into the final comment here on Masuru Emoto. I think a lot of people loved his work around finding that there would be certain crystal formations from using positive words or negative words. It seems now that could we even say that light, human consciousness, and water are all connected? Which would be profound. I guess that would be the next direction. It seems that there could be something to that, as well.

Professor Pollack Well, I do think that there is. Emoto, unfortunately he passed about one year ago. We've never met, but he was supposed actually to come to my home for dinner to give us a chance to meet because he was really interested in our stuff. And I was kind of interested in his stuff. Unfortunately, he passed and never made it to dinner. But I've gotten to know the various people in his organization.

And there are kind of two aspects to what he's found. And one is the spiritual aspect. The other is a scientific aspect. And I'm not a spiritual guy although I certainly am interested in what they have to say. But from a scientific point of view, some of the criticism that has been lodged is that he cherry picked his pictures. So he said, "I love you," to the water and then froze the water and got beautiful crystals. And then, "I hate you!"

And or thinking bad thoughts versus thinking positive thoughts and the quality of the beauty of the crystal depends on which of the two was used. So a lot of people were skeptical because it's easy. You're going to get 100 different samples. You pick the one that best illustrates what you want to show.

However, this was actually checked by a group who a fellow named Dean Radin at the Institute for Noetic Sciences. And he did some studies and took some of these randomly chosen images and exposed them to people, naive observers. And they got it right actually. And he said that the results were statistically significant, although not hugely so, but they were statistically significant. And so that speaks for the reality of what's going on.

And they have a scientific group working on this, as well, Professor Dr. Emoto who is doing experiments on this. And they're serious about the science and understanding it and what's going on. And we have some results that are somewhat supportive because, you know, as I mentioned, when you freeze water, you don't freeze H_2O. The H_2O first goes into EZ water and then to ice and vice versa when you thaw. And so if the EZ water can store information, then it can store sound information. And we have some evidence for that.

And also when you're thinking of something, and you're generating energy, we're all generating infrared energy all the time. If this infrared energy has some information embedded in it which is entirely possible. Nobody's studied that. It can be bland, generic information or the energy that we exude from ourselves which is measurable could have some information in it. And this information received by EZ water could impact the ice that's formed from the EZ water.

So theoretically, it's entirely possible that we can begin to understand what Emoto has found. And I stress that he was a spiritualist. He was not a scientist. And so it's time now for scientists to jump in, those who are interested, and try to understand and see if this is something real and understandable. And I'm optimistic that there's really something in there that says something really important not only about the water, but about the energy that's received by the water. This is the frontier.

Niki Gratrix Yes, it certainly is. And that's also absolutely intriguing. So I just wanted to thank you so much, Professor Pollack, for sharing your time with us so generously and for your ongoing courage to speak out about this state of the art science, which requires a paradigm shift in conventional understanding. But this shouldn't deter us from exploring and researching this. So thank you so much for your time.

Professor Pollack Oh, you're welcome. And if just I guess a final comment is you know a lot of this information appears in the book that I wrote called *The Fourth Phase of Water*. And anybody who's interested, it's generally quite a readable book according to the reviews. And I would encourage any of you who are interested to get a hold of it. So you can actually read a few of the chapters free on the web. So there's much more information about water and the fourth phase of water in that book.

Niki Gratrix And what was the website that people can go to get the free chapters?

Professor Pollack It's ebnerandsons.com

Niki Gratrix So I actually have read the book, and it is very readable. And I genuinely encourage people if this work has resonated with you, with the audience, then definitely go pick up the book and read it.

And as some of the other physicians on this summit and scientists have said, some of the regular doctors out there are about thirty to fifty years behind some of the latest research so we need to empower ourselves and do our own research and work out if this resonates with ourselves and experiment. And thank you again, Professor Pollack. And take care everybody. And bye for now.