Groundbreaking Bioenergetic Research at University of California

Greg Eckel, ND, LAc With Hemal Patel, PhD

Greg Eckel, ND, LAc
Welcome back, everybody, to the Bioenergetics Summit. I am your host, Dr. Greg Eckel. I have Professor Hemal on board today. We're talking about groundbreaking bioenergetic research at the University of California and other institutions. Dr. Patel is Professor and Vice Chair for research at the Department of Anesthesiology at UCSD. He's Research Career Scientist and Research Pharmacologist at the VA San Diego healthcare system. Welcome aboard Dr. Patel.

Hemal Patel, PhD
Good to see you, Greg.

Greg Eckel, ND, LAc
I like to start, you know, a lot of times when a theme that has come out in the Bioenergetics Summit is that there is more and more research coming out where this topic used to be considered woo-woo, or you know, really out there for the tin foiled hat folk.

Hemal Patel, PhD
Yeah.

Greg Eckel, ND, LAc
You know, it is now, it is coming into the realm of research, and I'm wondering, you know, one, for you as a researcher and scientist, you know, maybe a bit about your field and how you got interested in this.

Hemal Patel, PhD
So I trained as a cardiac physiologist many, many, many years ago, and we were looking at large animal systems and how they adapted to stress. As we refined our understanding of this, it got

more and more esoteric and more and more defined. And it turns out that the first line of defense in modulating systems becomes the plasma membrane of a cell. And so over the last two decades, we've really fixated on the cell membrane as a conduit for how the cell behaves and ultimately lives, survives, dies. Turns out that the membrane is a major regulator of energetic processes in a cell. It couples to mitochondria. It is the barrier that limits oxygen flow in and out, and this becomes a key feature of how cells behave. The other aspect is they're surrounded by water, and they respond to energetic changes within their media. And so we think that this membrane, which ultimately is a capacitor, is the sensor that then responds to variations in the outside environment and then really regulates the internal environment.

As we've started to look deeper and deeper into this, it turns out that the membrane can change and shift in different frequency fields. I mean, there are crazy studies that are done that if you take a stem cell, and you put it into a pulsing electrical field, you can turn it into a neuron if you pulse it at a unique frequency. And you can turn it into a myocyte, a cardiac myocyte, if you pulse it at a different frequency. So this suggests that there's information captured in wave form that living systems respond to. And we're, I mean, we're electrical beings, right? I mean, our neurons are charged. Our hearts are charged. They create these fields that we respond to. And maybe biology is really this misshaping of the field over time that leads to disease, and if we can understand this in a critical, better way, there may be ways to enhance disease processes. And so this is what led us down this path of really thinking about energy frequency waves and modulating biology from that perspective.

Greg Eckel, ND, LAc
Lovely, so there was a growing amount of evidence around those fields and charges and the influence then on our physiology, biochemistry. What was your first kind of foray in here? Because you really came from conventional land.

Hemal Patel, PhD
Yeah, so I, you know, I got hooked into Joe Dispenza meditation stuff. And so I went to a couple events. We started collecting samples from his events, and we saw these mega changes. And so I had this idea that one of the concerns I had as a skeptical scientist is well, what's causing this, right? Is it a placebo effect of someone just thinking that they're better in their mind, or is there really an energetic signature that's being created? And so we did this really bizarre experiment, which I thought was not gonna do anything. We actually did it here in San Diego first and then at an actual Joe Dispenza event. We took a bunch of water bottles and put them in a room full of meditators, and water, I mean, we're basically water, right? We're a bag of water. And we had a

bottle of water in the lab, so that was our reference control. And I brought the bottle from the meditation the night before into the lab, and I had one of the postdocs scan it. And he's like, what is this water? It's very different than this water that was in the lab. And it was the exact same source bottle just split in half, right? So that was this idea that maybe a room full of individuals that are elevating their energy can create some of this information transfer into a medium which we are, right? And so you can sort of see this. So we ran a more controlled experiment at an advanced follow up event he had in Denver, and low and behold, there were some dramatic changes in the water that were in this room full of 1600 meditators versus here at UCSD in the lab. And they were different based on the type of vessel they were in. So a copper bottle created a unique signature relative an aluminum, stainless steel versus plastic.

It's completely different. And then the controls for all of this were we had water that was mineral enriched. So basically stuff that people drink in the lab. And then the control for that was double distilled water that has no minerals or anything in it. And they behave very differently. So we think that there's components of minerals that can trap some of this information and energy. And then ultimately, the quest is now, can we transfer this? So then fast forward to where we're doing all this stuff. I met Harry Massey at one of these events, and he said, "Hey, I have some water that we think can change biology." I'm like, that sounds like a bunch of you know what, right? And so he's like, "Let me ship it to you, and you try it out in the lab." And so he shipped it to us. We played around with it.

And one of my postdocs, who is really starting his independent career, started working very closely with Harry. I advised from sort of a 10,000 foot view, but these guys then take the research on themselves, and they're advancing to the next level. And you put this information water on this infoceutical, and you see these dramatic changes in biology that you never predicted, right? And so this is really where I think the field, at least for groups here at UCSD and others, and now that I'm looking at it, when I go to these events and I mention water, eyes light up. People are thinking about this as a way to really change the way you could imprint biology. And this is where I think we're headed is we're gonna one day have ways to change the water within our own biological systems for health.

Greg Eckel, ND, LAc
That's pretty radical. So what are some early results that you're seeing around, what's out of the latest research coming out of the labs?

Hemal Patel, PhD

Yeah, so one of my suggestions as an advisor to the research group was to focus on mitochondria, right? Mitochondria are the conduits for how energy is made and utilized within a cell. So basically oxygen comes into the cell membranes. It engages with the mitochondria, and through the electron transport chain, you create this gradient, and you create high energy at the end of it. It's a very efficient process. This is basically what allowed really complicated structures and living organisms to grow and evolve and behave and create, right? And so this relationship is very critical. If we deprive ourselves of oxygen, we die very rapidly where we cannot live in an oxygen environment. By the same token, If you have very dramatic changes in oxygen, your systems can't handle it, and they have to process. And so the first barrier to all of this is the membrane.

And so one of the things that they fixated on was how is the membrane and the mitochondrial diad altered in this water environment that's created with these in infoceuticals, and then ultimately, with these imprinters that can imprint that signal. So they saw dramatic shifts in membrane biology when you expose them to these in infoceuticals. So we know that there's some resiliency that's being created. And so this gets to that first thing that we were thinking, right? That if you're gonna modulate life, frequencies are gonna interact with the membrane initially. And we can see this in their systems at a very early stage. The other thing they've noticed is that they jack up mitochondrial function. And so if you're gonna create energy in a living system, you gotta drive your mitochondria towards a positive process versus a negative process. The positive process is making ATP and energy.

The negative process is they don't know how to handle that oxygen, and they make free radicals and you destroy proteins, lipids, nucleus, DNA, all kinds of stuff. And so it turns out that these drivers of energy that are encased in this infoceutical water, when you add them to cells, they actually drive up mitochondrial function in a positive way. They're making more energy. And this appears to be through a modulation of the membrane, which is quite significant. So they've tried this in a number of different cell lines. It looks like there seems to be an impact on some muscle cells. What was surprising is they, we had a, you know, we have hundreds of different kinds of cells going in the lab. And someone had a culture of neuronal stem cells in the lab. And there like, you want me to put it, I guess Juan and these guys were talking about this. Maybe we should just put the water on them. Do it. And so they put it on, and these neural stem cells started growing like crazy in this energy water. And so they noticed that there is this potential to increase stem cell-ness as well. And so they're off and running.

We'll see where they end up. But it seems to be energetics and growth that really seems to couple to these profiles. The other system that they've been playing around with is infectivity. I mean, we've been, you know, we live in a world right now where everyone knows about viruses and PCR tests and all kinds of things, and our knowledge level's gone up. And so it was a no brainer for them to just run assays on immunity. And it turns out that these infoceuticals that are targeted towards immunity have an absolutely dramatic, amazing effect on limiting pseudovirus entry for SARS-CoV-2 into cells. And it was interesting that, you know, if you buy into this idea that information that's captured like this should not be able to be diluted, right? So whether you deliver it as a large water signal versus you dilute it a thousand fold, the information's still there. And so they diluted it I think 10,000, 100,000 fold, and the effect was the same whether you gave it straight on or you diluted it, suggesting that that information is what's really being transferred to this system, which is quite significant.

Greg Eckel, ND, LAc
Wow, so even on, so with diluting it, it didn't, so in homeopathy in particular, it's considered, you know, the higher serial dilutions are more potent.

Hemal Patel, PhD
Right.

Greg Eckel, ND, LAc
But not in that research. It's the same response rate as far as in a Petri dish.

Hemal Patel, PhD
Yeah. Yeah, I trained as a pharmacologist. It is something we think about a lot. And so a lot of drugs actually have biphasic responses where if you go really, really low, like I mean, the hot area right now is microdosing all of these, you know, psychological kinds of drugs. And it's really, really low doses that create this effect. Opioids do this as well. If you give them at a very, very low level, they seem to have a biological effect. Then that effect sort of washes away, becomes more toxic. And then you see another phase at a very high dose as well. And so this is where we think, I mean, what they've measured so far appears to show that there's no dilution effect. I think if they were to dig deeper, they would see a graded dose effect, right? At the really, really diluted effect, the end point is potentially the same, but the process may be very different versus at the high end effect.

Greg Eckel, ND, LAc
The neural stem cell growth is very near and dear to me is really looking at brain regeneration along those lines. And I know that this is in a lab, in a dish, in a controlled environment.

Hemal Patel, PhD
Right.

Greg Eckel, ND, LAc
But that's super exciting to hear that they're in. Are those articles, are those published?

Hemal Patel, PhD
No, so I believe they've submitted a white paper. So they have it sort of organized into a paper format, and then they're finalizing the studies, and they're gonna submit this soon, I believe, from UCSD.

Greg Eckel, ND, LAc
So then also, right, with our recent history pass, we're still kind of in it. Everybody's heightened awareness around viruses in particular. Can you go into that? Like, you kind of, you made it sound so simple.

Hemal Patel, PhD
Right. Yeah.

Greg Eckel, ND, LAc
That it was basically the virus wasn't able to get into the cell when in the solution of the information that the water had in it. Did it also then affect cell replication, or anything like that?

Hemal Patel, PhD
Yeah, so the assay that we've developed is really came out of not being able to access a BSL-3 facility to look at live virus. So we've, in order to work with this pseudovirus, we've gutted the inside. So there's no pathogenic component to it. The cell surface has the spike proteins on it, so it will engage a lung cell like it would normally engage with the real virus. But then the inside we've replaced with a red reporter. So when this viral package engages with the cell and goes in, it turns the cell red, and that allows you to track viral dynamics. You can see how many cells get infected. So typically, if you would add this virus without any protective agent on the cells, within 24 hours, the majority of those cells would turn red. So that's our baseline. So then for the

experiment, what you do is you bathe these lung epithelial cells, which would be the first cell that would see virus inside a human body, with the infoceutical or whatever signature molecule that you're looking at to cause that protection, you'd let them sit in that environment for about an hour, and then you would come in and challenge them with this fake virus that resembles SARS-CoV-2 on the cell surface. When you do that, there's dramatically less virus that gets into the cell. So whatever information this stuff is creating, it's somehow preventing the virus from going in and trapping it on the outside. But I don't think they've done the follow up assays. I mean, there's lots of biology you can engage, right?

What is the interaction of this information with the machinery that the virus needs to get into the cell? There's lots of different components involved. So they could go really deep into figuring out what that molecular process is, which would be very exciting to do. I mean, if again, you buy into this idea that this infoceutical changes the structure of the membrane, the way the virus works is it binds to these receptors on that membrane. And then there's a protease that chops up where the virus is bound with these receptors allowing it to internalize. So you could hypothesize that potentially, this information manipulates how that virus attaches to the cell, or it manipulates enzymes that then process that attachment to get the virus in. Either is possible, but you know.

Greg Eckel, ND, LAc
Time will tell.

Hemal Patel, PhD
Follow up. Yeah.

Greg Eckel, ND, LAc
Yeah. Then that brings up the cell membrane. You said that there is some research that you're seeing around the actual permeability of the membrane of the cell wall, which is huge and has far reaching implications for whole, like, chronic illness in general. What are you seeing with cell rigidity?

Hemal Patel, PhD
Yeah, so what they noticed is when you bathe the cells in this media, there is this shift in fluid to rigid ratio. And I've been a big believer for years that rigidity is a good thing, right?

Greg Eckel, ND, LAc
Yeah.

Hemal Patel, PhD
And most of that rigidity is driven by lipids in your membrane, so cholesterol. So there is this big push to reduce cholesterol to low levels. I agree, if it's at a toxic level, you need to get it down. But cholesterol is critical to how our membranes behave and function. We were doing research years back where, you know, looking at heart sort of dysfunction and things, it turns out that high cholesterol domains are actually adaptive. And so we jokingly would say if we're having a heart attack, you should get to McDonald's and have the fattiest meal you could imagine because this protective effect. And there's, it's starting to develop that there may be some element to this. And so what we think that this information is creating is that resiliency in the membrane, is it's making some rigid fluid structures more stable.

And then ultimately we think that membranes oscillate. And so we may be fixing this membrane in an oscillatory pattern. One of the far reaching ideas we have is that there may be some ties to circadian biology in all of this as well. So if everything has this pattern that sort of, you know, alternates within a day or timeframes less than a day, we think the membrane may be one of these key features. And what happens with disease is that these patterns get altered. And so now if you can reinfuse information into that system to become more homeostatic, you basically return it to a normal alternating pattern that then creates this resiliency. And we think lipid reorientation is one of the ways to do this. And it appears that this infoceutical signature appears to reorient lipids in the membrane.

Greg Eckel, ND, LAc
You know, just on programmed water! You know, it's kind of baffling, but you're seeing it in the lab. What have you been surprised recently on, you know, maybe some findings that you're like, how in the world did that work?

Hemal Patel, PhD
Yeah, I mean, it looks, feels, tastes, behaves like water, but you put it into a living system, and it totally not water, right? If we were to take water from our tap and put it on a cell, the cell would not respond to that. So it boggles my mind. And this is what I think my advice to these guys to figure out is what is that information? How is it carried? And then ultimately, how does it transfer to a living system? If you could figure out that loop, there's gonna be so much biology that's created around this that you're gonna transform virtually every disease, I would imagine.

Greg Eckel, ND, LAc
Wow, that is super exciting. Any last parting words for our listeners and viewers on the Summit?

Hemal Patel, PhD
Well, you know, water's important. Go find some good water and drink it.

Greg Eckel, ND, LAc
Awesome. Source matters. There it is.

Hemal Patel, PhD
Yes, it does, yeah.

Greg Eckel, ND, LAc
All right, Dr. Hemal Patel, thank you so much for coming on the Summit.

Hemal Patel, PhD
Yep, it's good talking to you.