How To Use Your Immune System Against Prostate Cancer Transcript

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Introduction and Guest Background

Everyone. Welcome once again to the Prostate cancer Summit. I'm your host, Doctor Geo Espinosa. And it is my great pleasure to introduce to you Doctor Matthew Halpert, who earned his doctorate in immunology after five year enrollment at the University of Alabama, Burlington.

Birmingham, I'm sorry. Graduate school and joined Baylor College of Medicine in 2011 as an academic researcher. While in Texas Medical Center, Doctor Halpert made numerous key discoveries regarding previously unrecognized mechanisms within our immune system and importantly, how those mechanisms could be naturally utilized to reprogram an immune treat.

An immune response. To eliminate a target, such as cancer cells. This science was. This was studied in depth, worked on extensively, and progress immensely by the efforts of Doctor Harper.

As partially as partially evidenced by his numerous peer reviewed publications of various top notch science and medical journals, as well as his ownership of over a dozen patents within the previous decade.

Doctor Harper was successfully launched, a non-for-profit charity to help support such research efforts. A traditional biotech venture designed to carry this science through various FDA clinical trials and towards regulatory approvals, and a compassionate use clinic called Immunogen in Cancun, Mexico.

Currently offering high and tech integrity personalized immunotherapy options based on the same research and two patients which are ineligible for any of the clinical trials.

Lastly, over the period of time, Doctor Hubbard has been solicited to assist other biotech ventures and academic initiatives, FDA efforts, precision medicine conferences, and more.

As a growing key opinion leader in the space of personalized cancer care. Doctor Halpert, thank you so much for joining me on this summit. Thank you very much for having me.

All right. We're going to have to unpack this a little bit. And if it's okay, I can go by first names. I'll call you Matthew. You can just call me Geo if that's okay.

What's an a very basic, 32nd overview, which is impossible. What's, what's the immune system? What immune cells actually have an effect or should have an effect on cancer cells?

And what happens when they stop working properly? Let's take it from there. Sure. I'll do my best to be brief here, but you know, the, Right. We have different system, circulatory system, you know, for example.

But the immune system is your defense system.

How the Immune System Fights Cancer

It is created, designed and empowered to protect the person you know, you every day from various threats, be it bacteria, viruses, parasites, even cancer.

I mean, our immune system has specific cells designed to eliminate rapidly mutated and rapidly proliferating mutated cells, which are cancers. Would you give us an image on that?

Because that's actually very important. So let's say this cell is normal. This cell is not. The immune system says, well, no, this is my friend, but this guy looks weird and let me attack that, like give us like an over like animation.

So we have some images in our head, Pac-Man or something. I don't know. Sure, sure. So you've got you're you're again, you've got tons of checks and balances in your immune system and different cells.

You know, we think of them sometimes. We think of the immune system as one thing. It's not. It's actually a very complex, interwoven tapestry of different cells with different functions for example, the dendritic cell, which I know we'll talk about is the general of the immune system Army.

It it's job to see a threat, see what the problem is, figure it out and then organize an optimal and complete immune response. It does not do the killing but it does provide all the blueprints for that killing.

Then you've got cells like natural killer cells and, killer T cells, for example. Well, they're the foot soldiers. It's their job to now actually take those plans circulate throughout the body, finding whatever they were just informed of and kill it in an organized way, in a way that's designed.

So when you have so normal cells will replicate. That's how we stay alive. You know, a cell, one cell will become two, and it's supposed to stop if there's been, a couple mutations or some other problem.

And that's a whole different discussion. Well, now two becomes four, four becomes a eight becomes 16. This goes on and on and on. Those cells in our body I described before are supposed to see that there is a problem.

This is obviously being caused by a mutation. There's something something's different about the cell or it be doing this again. Normally you and I are sitting here.

As far as we know, we don't have cancer, which means our body's doing its job. Our immune system is doing its job because I got news for you. Micro cancers are bubbling up all the time.

I was going to I was just going to say or ask, actually, are we always making cancer cells and in a good immune system? And then the dendritic cells working properly, they just get rid of it.

Is that what what's actually happening exactly. Those cells see this problem. They go over and say whoa, whoa, whoa. This cluster of cells is wrong. I see the mutation go away and you and I don't even know about it.

It's too small and it just happens. And we go on with our life that is what's supposed to happen as we get older and things don't work as well. You know, who knows the exact reasons?

The problem here, in a sense, with cancer is immune ignorance. In a way, it's an immunological disorder. The immune system flies on by. It sees this fast growing population of cells 16 to come, 32, 32 become 64.

And it says, yeah, that looks normal to me. And it moves on. Eventually that cluster of cells gets big enough to start causing some red flags in your bloodwork or in an organ or something.

You go for a scan, you go for some workup and they say there's a tumor. You know, we see a mass, we see a problem. And at some point, if this mass starts burgeoning in an important organ, you know, you start suffering organ failure.

You know, it can lead to fatal outcomes. What what's. Actually happening there, Matthew? So here's what I'm asking. And I don't know. Right. So for the sake of simplicity, particularly when I'm talking to a patient, I'm saying, look, you're the immune system is likely weakened, but is that is that what's actually happening?

Like, seriously like a weak immune. Like the cells are there but they're weak like flimsy or you're not making enough of them, or the dendritic cells are not like what's actually happening when these things stop working.

Yes. Excellent question. And you actually it's a great, transition into the the rebirth of immunotherapy, which is now which started around 2011 and with the approval of ipilimumab or anti TLR for, for cancer.

And so in some of those early trials this is what we saw. You take a population of patients with a fatal you know a lethal cancer. 0% will overcome it will survive it.

You give them this drug. Now all this drug does is empower educated activated immune cells. That's it. It's not providing education. It's not creating immune cells.

It's simply giving a boost. Pictured as, a bodybuilder suddenly taking steroids. Yeah. You're going to be a little bit stronger. Okay. It's not that you weren't strong in the first place, but now you're stronger.

And in that in those studies, all of a sudden 5% of patients were cured. Now you say, okay, so 95% still still die. And this is not why are we excited?

Because 5% of patients, that's all they needed to overcome cancer, a previously unheard, attainable opportunity. And what that tells us is an immunologist is hold on.

What was different? What did this 5% have? An answer is they had a they did have, their immune system was trying to eliminate the cancer, but it was weakened.

It was too weak and it couldn't get the job done. It needed power. Unfortunately, most cancer patients, it's not that their immune system is weakened.

It's that it's naive. It's that it doesn't even know there's a problem. It's not that it can't fight it or can eliminate it. It's twiddling its thumbs.

It doesn't even know it's supposed to be doing something. So step one for a majority of patients is fix that. It's a little bit of a mess. I don't I don't know if I should say it's a mistake.

Why Immunotherapy Works for Some Patients

I don't want to get in hot water with some overarching governmental agencies, but checkpoint inhibitors, for example, boost an activated immune response.

Why do they only work in the small percentage? I'm telling you why. Because if you don't, if you're not one of the lucky one for you already have immune education.

What are you empowering? What are you boosting up? The answer is nothing. And you get side effects, off target effects and it doesn't work. And they say, oh well, it didn't work.

The immune education part should go first, but that's just not where we are at the moment. And so that's kind of where we stumbled into with our discoveries.

Almost 20 years old now. And we've we've published on this. We're not hiding the mechanism. You look, how young did you start this? Where you are your prodigy.

You are 15 years old. I mean, not one in your hair. In your hair. This is not right. What's happening here? 20 years ago. Now, I, I yes, I, you know, I mean, in my 40s now, I feel I feel old, and in high school, it makes me feel really old, but.

Okay. That's that's that's right. As a, Yeah. Sorry. I can talk to you about my midlife crisis later, but, Yes, it all started with research in the Texas Medical Center, where we've known since the 70s that dendritic cells run the immune system.

That's why in the 90s, there was this massive push. Everyone tried to use them. Well, if we're going to fight cancer, it's got to be with the dendritic cells and nobody could get them to work.

It's like you have a key, great. You have the right key, and then you're just shoving it randomly at a door. That's not how a key works. You have to put it in the keyhole.

And no one was doing that. So after a repeated shoving at the door which didn't open it and unlock it, people moved on. They said, okay, well, we can't get it work.

We'll try something else. And you've moved on to other artificial ways to hijack the immune system. Some are valuable. I'm not not knocking all of them. They have their role.

But by definition, if you've moved downstream of the dendritic cell, you're doing something artificial because there's no way to get a physiological complete immune response without starting at the top, you have to.

So my group stuck with dendritic cells. Some others did too. But they there's a difference in philosophy. A lot of groups out there using dendritic cells now said, well, we have to try some other way to get through this door.

And so they they add other stimulations that other things. We've got to do something. Let's add bacteria. Let's at BCG let's add Coley's toxins. We've got a. So it's kind of like going up that door.

You have the key and you say I know what we need to do. We're going to pull out this bazooka and we're going to also shoot through the door with the bazooka.

And now we get in. Not correctly. There's a lot of collateral damage. That's not how the door designed to work. Like you guess you might get into the house.

You might do something, but you've not done it right. My group stuck with it was a research group. That's all we were. We're just saying we're missing something in the door.

So we're missing a mechanism for how to reprogram this to how to get this to work. And we found it. And that might sound a little bit arrogant, but again, years of study, publications, patents, clinical trials, acknowledgments from the FDA continue to tell us we're not wrong.

Whether or not we can do more and more and more is sure, but we're not wrong at the foundation. And as it turns out, there's this critical mechanism within the dendritic cell waiting to see the target information in a very precise way.

You can't just you have to be precise with it. And you have it's you know, again, it's the basis of everything. It's step one. It's step ten, it's step one.

This is how it starts. When the dendritic cell sees the target information in this way, it wakes up. It changes its genetic signature. It becomes a powerhouse cell.

It says oh my gosh, we have to eliminate that threat. And then it goes and talks to the rest of the immune system, such as your natural killer cells and your killer T cells, and says, you need to fight this.

Here are 100 signals you need to properly activate. You're ignoring the signals you work. Your cells are ignoring the signals your NK cells and t T cells are ignoring this.

And then with this approach, it says, okay, it wakes up and says, okay, those are the signals. Let me attack more or less. What? This. Before you actually do this, those signals aren't even there.

Right. So what dendritic cell signals to I'm curious if you know why that. Why does that happen? Why these signals stop working with age. What's the natural, pathophysiology, if you will, of the signals to kind of.

Right. All right. I'm, I don't want my signals to stop working. Look at do these therapies if I need it, but. Yeah. Okay. Signal to to to work. That's a different question.

And of course, my number one advice is still don't get cancer. No. How do we how do we do that? How do we have these signals working? I'll give you a couple of ideas, a couple of, theories, because we don't actually have point answers, but one kind of, I would say could be an obvious one is to remember that our lymphatic system, our immune system does not have a pump.

I mean, you know, if you're sitting on the couch watching TV, your blood will still circulate, your heart pumps it around. But if you're sitting on the couch watching TV, your lymphatic system is not moving.

It requires muscular contraction to move. When we're young and our kids, we're always running. We're always on the move, even if we're trying to sit still, we're moving as we get older, maybe a little heavier, a little more tired.

We have our own kids, right? We fit a lot. I mean, whether it's right now you and I are sitting, you know, having a car, but I'm not. You are. I'm not.

All right.

Dendritic Cells and Immune Reprogramming

I said, No, I appreciate what you're saying because it's so true. I think that I think, you know, somebody some research said, you know, sitting down for a prolonged period of time is like equivalent to smoking or something.

Maybe an exaggeration, but maybe not actually in exercise. I mean, it's as simple as you've got to move. And so as we get older, we we know exercise is important, but very often we don't get near enough.

Well, okay. If our surveillance system, it's almost like if you say, I'm going to move 10% as much as I used to. In a sense, you're acknowledge again, okay.

So my immune surveillance will be 10% of what it used to be. And then you're surprised when you get sick more often or something like this happens. Well, what are you doing about that?

Another issue we have, and this is become a very big issue, is there's obviously a lot of importance to the microbiome and gut health. And we've that's been very well established at this point.

So the question is do we take care of that? How well do we take care of that. And at least, you know, over here in first world Western culture, not so well, you know, and, and I don't there's been some interesting studies where, even if for just a couple of weeks, you eat a very, almost bland but nutritious diet.

How rapidly your intestinal tract changes in regards to inflammation, bacterial species. And so what if you're just constantly eating junk, and not protecting your gut?

You're turning on a situation for chronic inflammation, which, you know, now it's a war zone. And things happen in a war zone, and cells get mutated in a war zone and think, and again, what are we doing to protect that?

Are we taking the right prebiotics, probiotics? Are we eating the right foods? Are we drinking enough water? I mean, again, some of the stuff is stuff we've all heard and we're only now starting to realize, yes, it maybe used to be just anecdotally, but there's a legitimate amount of science behind it.

And so I think you probably know, colorectal cancer has been on the rise in the younger population, between the ages of 35 and and 55, it's been drastically on the rise.

So the question is, looking at this age group, what has changed? Why is that on the rise. And so you have to go back to kind of the maybe the 80s, 90s, you know, early 2000 and, you know, you've got the rise of fast food, processed food, sugary drinks and sodas, diet sodas.

Everyone thinks diet sodas are harmless, but you're you know, the sugar was replaced with a chemical. And those

chemicals have a variety of issues. And so again, please don't miss here.

I mean, things in moderation are fine. I'm not going to tell you I don't ever have a soda. I'm not going to tell you. Don't ever eat just absolute junk.

But you cannot subsist on these things. You absolutely must keep it in moderation. So. But I appear to. I appreciate that very much. Yeah. I'll also say one third thing.

Because you asked sleep. Yeah. Okay. Another thing. Well, yeah. Sleep's important. Not just sleep deep. Sleep quality. Sleep well. And why is it just another guy with a platform saying good sleep?

It's important you know, here's why. It is during deep sleep that a couple important things happen with our immune systems. One, it's when our bodies, consolidate the immunological memory or, acknowledgments of the day.

Your immune system might have actually seen some threats, but for it to convert into a larger scale attack, you actually have to have that deep sleep to, to allow that conversion.

Another thing is that's when our body makes fresh, powerful immune cells. That's the optimal time when you're during deep sleep, meaning if you're not getting that good quality sleep because you don't think it's important or you can't, you're not making enough immune cells, you're not allowing enough immune education.

And so even if your immune system is trying, you're not giving it the resources that it needs. And so, I'm just giving you simple things a little bit, so.

I can't tell you I appreciate what you're saying as much as as much as I will appreciate, the next version of this conversation, which is. Okay, that's it.

We that know no shaming anyone because everybody has done things wrong. Here you are now you have pretty aggressive cancer in this case, prostate cancer.

All right. Now what how do we how do we reactivate these these cells exactly. No. Absolutely no shame. I by all means, not perfect. I, you know, so to be clear, it's much easier said than done.

I have three children. I have a busy job. It's not always easy to get this stuff in, but I do think understanding its relative importance will help people to prioritize it a bit more in their head.

Sometimes, if you don't know why, if you don't have the why, it falls. Why is that important? I know people say, but why? Well, knowing the why can can help so right do these things.

They're simple but and there's a number of studies that validate that doing these things does reduce your odds of cancer. Some publications have it as much as I mean, I've seen over, you know, 50% and 80%. It's not insignificant.

It's actually relatively large. Lifestyle changes can have a huge impact on cancer. Yes, you may be subject to some mutations that are just beyond your control.

That's another component of it. And that's obviously very unfortunate. But we can do it. We can do and that's that's it. Right? I mean, I'm not God, you know, I can do it.

That's right. Fast forward now. So here we are, advanced prostate cancer. So how how so how does immuno seen work. So if I am one of those patients that come to see, go, go, go see a clinic, what happens from a dendritic cell perspective.

Right. So as I said, we had been working on this science for many years in the Texas Medical Center to a point where the scientists recognize this cannot fall.

We cannot lose this discovery. It it does possess the ability to be revolutionary. And I don't say that lightly. I just tell you that is the reality of the discovery, because it is natural.

It is the it is the natural way the immune system works in anything fundamental, probably important. Why aren't we using it? So we have started clinical trials, FDA trials in the United States, with various top notch institutions such as Baylor College of Medicine, M. D.

Anderson, UT health, Cooper Hospital, and a variety of more. I think we've got 15 coming on board for the next phase of the trial. We're doing that. We're working with the FDA.

We want this to be approved so you can go get this if you need it and have it covered by insurance. And as part of your plan, our first clinical trials, we decided to set the bar extremely high.

And we picked extremely difficult cancers like glioblastoma, pancreatic angio sarcoma. Our thinking being if we can show the world that we can move the needle and improve outcomes in these cancers, where do you think it can't work?

Because all I've told you at this point is it's dendritic cells with the target. I didn't tell you what that target had to be. Your immune system doesn't necessarily care if it's in for the prostate or the colon, like it is supposed to protect your whole body.

It just needs to know about it. So we picked these toxic, I can tell you two of them, we've wrapped up one. Another one is about to wrap up. We've been fast tracked by the FDA twice, meaning they've acknowledged clinical results that this is actually working.

We're working on the publications now. We've had no attributable severe adverse events, meaning nothing catastrophic, no crazy side effects. And it all results from taking some tumor tissue, taking some cells from the patient reprograming their dendritic cells, giving them three shots separated by two weeks each.

Those shots are ultrasound guided near functional lymph nodes. That's it. That's all we're doing. It's a very low burden on the patient. And all of a sudden their immune system is engaged, is fighting.

Lifestyle Factors That Affect Immune Health

You have a real shot now at, a very positive outcome. It's not a guarantee but the opportunity is there. We're doing all that. So let's get to your actual question.

What if you have prostate cancer? Can you get one of the clinical trials? No, we don't have a prostate cancer clinical trial right now. And given that this is just biology, given that it's safe, given what it is, given that it's actually synergistic with almost every other treatment, I mean, it's not replacing, you know, you're not losing any options.

You still want to do another clinical trial. You can you still want to do chemo. You can. You still need to do surgery. You can you you still want to do alternative or life.

You can do all that stuff. This is just do you want to get your immune system properly engaged in fighting? I started to have a sick feeling as an academic researcher, having people ask me to get this treatment and I tell them there's no where to get it.

You can't get it. We're not approved. It's going to be years and years and years, and that's for the you know, that's for the cancers we're working on for something like prostate cancer.

We haven't even started. So this is years down the road. And that's just the process. That's just the regulatory system. And so the goal was to try and figure out how to make this more available today in an eyes open, transparent way to patients that could benefit from it.

And how do we do it legally and ethically and correctly, with all the muster and all the the same regulations you would want? I mean, we're not going to cut corners. I'm not going to do it.

That if we're going to do it, we're going to do it right. And so after many years of visiting different clinics and trying to figure out the best way to do this, honestly, I just didn't I didn't find anyone I trusted to do this correctly and with the right integrity.

And so I decided I had to do it myself. And so I say myself just from the starting point, obviously there's been partners and a team along the way that I cannot acknowledge enough for helping Immuta get to this point.

Some of that would include the scientific team in Cancun, Mexico, that I found that had this beautiful ISO seven certified positive pressure clean room lab, right there, a lab equivalent to what we're using in the States for the trials.

Next thing you know, it's, hey, they can do this. They can make the vaccine the right way with the fresh ingredients. Right? Integrity checks, lots on board.

Oncologist radiologists, the right doctors. And a system sort of was born on the basis of the science as well as on. We're going to do this correctly the way you or I would, would want a top notch operation.

And so if you come to us, if you're a good candidate, we say you yeah, you look like you could benefit from this. But we don't say that to everyone. Right. Important.

But if we if you are a good candidate, all we need is a sample of your cancer, which we can, we can grab with a biopsy, give us a, you know, we need a pencil eraser amount.

We're going to take your immune cells, which we will then differentiate and isolate the dendritic cells. The generals in the lab, we're now going to reload those dendritic cells in the way that should have happened on day one.

It did it. But we can enforce it in the lab. It's out of your body. We know what to do. We can get this target information properly processed from the tumor sample we took and integrated in and on the dendritic cells correctly.

We have patents on this. We have publications on this. It's ours. This is no one else does this. When we do that you can almost literally see the dendritic cell in the lab like wake up, it's ready to go.

All right, I get it. That's the threat. If I need to tell the immune system to go fight this, we then put those cells back into the patient near their lymph nodes.

The dendritic cells go to the lymph node and they start talking to the rest of the immune system. Wake up. You know, it's a little hypocritical, but the generals like you have been missing this threat.

I'm telling you now, cure all the signals you need that I wasn't even giving you before. But I'm giving them now because I'm awake. Here's the information you need.

Here's what the target looks like. And keep in mind, I haven't mentioned this. We don't cherry pick. There's no specific peptides here. We're using the entire cancer information, the entire genetic code, the entire protein library.

Meaning we are giving the opportunity to the to the dendritic cell to see every possible mutation. So we're not targeting one thing that then is easy to fall off.

Then the cancer is invisible again. We're giving it everything. So it's much harder for the cancer to become invisible again. Those dendritic cells tell the you know, the T cells, for example, want to go target the T cells, wake up.

They start proliferating to create more soldiers to go fight. This causes lymph node swelling. Those T cells are now

going to migrate around the body looking for those same targets everywhere.

Personalized Immunotherapy for Advanced Cancer

So if you have cancer in your prostate as well as in your femur as well as you've got, you know, an activated lymph node over here, it's going to find all of it.

It's going to fight all of it. And, you know, and now an actual but I don't want to denigrate the treatment options and what people have done up to that point.

But in a sense, the fight has only now just begun. I mean. I mean, immunological perspective for sure. Perspective. It's been a very one sided annexing of your body.

I mean, the cancer's just been taking over untouched, unstoppable. There's been no defense. And so by doing this finally, you've got the Calvary coming to the battlefield to fight.

Now, good things can happen. Now we have positive outcomes. As you know, it's not a guarantee you might still lose this fight, but it's a fight. Now. You have a shot.

And so that's what we want to give patients, including prostate cancer patients, which we've had some very good successes with. We want to give them this option if it fits, if it works for them.

Now you mentioned that you need you need actual cancer tissue. If not it's not going to work. Correct. So from a biopsy. So what if you can't. Right. So you could do 100 biopsies in one time and kind of miss it.

That's a that's a thing. So if you can't get it you know it won't work. Is that, is that what is that what we're, partially what we're talking about? Yep. So, if a patient has, let's say, you know, let's say they went overboard or not overboard, but let's just say they made the decision.

They have whatever at stage two, prostate cancer patient, you know, and they do a radical prostatectomy. They pull it all out and it's gone. It's in the tract. Right?

They come to us and say, okay, well, I want this vaccine. I want this treatment because I don't want it to relapse. We there's no tumor tissue anymore.

There's nothing for us to use. So even with a rising PSA, which indicates in some cases, well, you know, there's a recurrence, but we we don't know where.

We have to get a sample. So very often she is going to do a harsher treatment, be it surgery or chemo. We'll say line up to come see us first for a biopsy, because then we've got it, then we've got your tumor tissue.

We'll hold on to it. Do whatever else you want to do, then come back down and see us and we'll create your immune response against it. So that's an example.

We do have some systems in place where if you want to collect tissue, at home, we can also work with you on that. But I'm a strong proponent of keep your options open.

And so even if you're going to do a standard of care or alternative, if you're doing anything that may shrink the tumor, consider saving some first so it can be used in a personalized immunotherapy like this later.

Obviously, if you're a stage four cancer patient, you probably have quite a bit of cancer we could pull from. We do not have to pull from the primary site. So, you know, if you've got a new node.

Bone not it's not as great. Not as. Right. Right. Yeah. Yes. If we can get we just need a sample from your body, you to your kind of do your question.

If you have a lot of cancer, we will do multiple biopsies to increase our odds of, you know, quote unquote, getting it, as well as getting a as wide a range of the antigens as possible.

If you have one lesion and it's smaller than two centimeters. Yeah. There's a risk that we don't get it. There's a risk that we we don't get enough tissue.

We tell the patients this is a known risk. If we don't get it, though, we don't bury our head in the sand and just pretend and proceed. We tell the patient.

You can you use the biopsy that was done somewhere else to for the diagnosis itself? No, not for diagnosis. We can use previously stored tissue if it was cryo preserved, meaning it was flash frozen or put in a preservative.

We need the genetic material, specifically the RNA. That's part of our process of of giving the dendritic cells the information. RNA is very degradable.

And so if you've thrown a tissue into paraffin or formaldehyde for pathology, it's been degraded. And we can't use it now. So some places will cry out preserve some tissue.

Not enough. But if you're lucky and they did, then yes, we can use that. Other patients have gone to groups like, I know, store my tumor, and there are other groups out there that are there to store tumor.

Yes. The answer to that is yes. But if not, we'll need to get a fresh sample. And again, we can do that biopsy. And can we use our interventional radiologist or a surgeon if needed. We do it in the procedure room of an internationally certified private hospital.

It's all done very safe. Typically it's outpatient. You know, we again, it's a it's a very top flight run, but yeah, we can do that in can come. So if you're sitting there with a five centimeter mass, yes, we probably can take a biopsy of it will probably take a couple couple core samples.

And we just need some of it really to be cancer. We have not been able in 20 years to turn on and off target effect. And I'll knock on wood, but, you know, we can't I don't know how to make the immune system attack all your cell membranes and cause a person to melt.

If you haven't seen that, the neoantigens or the mutated antigens do seem to rise to the top and are what are targeted by the the resulting in the response.

What? And this is a final question. What's, what's the possibility of some sort of an, immune autoimmune response where is unfavorable? So now it's you're doing such a good job.

You're doing too good of a job. And now it's, recognizing that normal cells as cancer cells and attacking our normal cells. What's the possibility of that happening?

Well, I'm not going to say 0%, because I, I, I never say never, even though I did just say never. But we have not seen that happen. We have not been able to induce autoimmunity.

This is a known potential outcome with long term use, for example, checkpoint inhibitors. But I remind you, those are drugs that provide immune boosting, but no education.

And so if you continually are causing your immune cells to be activated, but without information, yes, you can cause issues where you're attacking the wrong, you're attacking your lungs.

You know, these drugs cause a lot of lung inflammation. You can attack the thyroid. It's a known issue. You can destroy your own thyroid using these drugs.

In theory, because this is, immunotherapy, I'd say it has to be possible. We just have not seen it. It seems to attack

only the cancer, whether visible on a scan or not.

We've had that happen where there appears to be a inflammation, you know, an inflammatory spot happening off off site.

Biopsy Requirements, Safety, and Autoimmunity

And then further analysis of the lavage, for example. Oh, yeah. It's full of cancer cells. Yeah. The immune system doesn't need an MRI to find what it's looking for.

It can find it. And it will, have just have not seen off target. We I will tell you, we don't treat patients that already have, a diagnosis of your autoimmune disorder.

So, for example, if you have multiple sclerosis, we would be concerned that our process might cause a flare. And so we are probably going to decline that patient, you know, same thing with other disorders, you know, be it Hashimoto's or, you know, rheumatoid arthritis and there's some gray area, but we an autoimmune disorder can be a disqualifier for this treatment for the exact reason you just described.

This is a a patient who's predisposed to self attack. And we don't want to exacerbate that. Right. Doctor Matthew Harper, thank you so much for being on this summit, such a so much wealth of information that you have, particularly as how the immune system and immunology plays a role is is key.

And to keeping people well after prostate cancer or cancer in general as well. How can people find you? Yeah. The easiest thing to do is go to our website at Amazon.com.

We put as much information as we can. We try to be very forward facing. So there's information about the science, the logistics. There's, you know, questions being answered.

So that's going to be our number one. But you can also find us on Facebook. You can find us on Instagram, you can find us on LinkedIn. And all our contact information is pretty readily available.

So you also can just call in or email us at care at the munising.com. We will try to be very responsive to get back in touch with you. We know if you have cancer, time is of the essence.

And we do try to to get through things as quickly as we can. And yeah, we're we're here to help. That's what we're doing. And so if we can help, makes us very happy.

Thank you so much. I really appreciate you being on. Thank you, Matthew. Thank you very much. Thank you, everyone, for, joining us on this amazing episode.

We have more coming. So stay tuned. This is Doctor Geo Espinosa, your host for the prostate cancer Summit. I'll see you next time.