

T Cell Redirection Drives Natural Immune Response Against Solid Tumors

With Asher Nathan NeoTX

An Empowered Patient Podcast Published January 8, 2020

Karen Jagoda: Welcome to the Empowered Patient Podcast dot com show. I'm Karen Jagoda and my guest today is Asher Nathan. He's the CEO of NeoTX, N-E-O-T-X dot com. They're a biopharmaceutical company developing anti-cancer immunotherapies and a topic we've been talking a little bit about on this show. So I want to welcome you to the show today Asher to give us a little more information about this exciting field.

Asher Nathan: Thank you so much Karen. I appreciate being invited onto the show and I'm excited to tell you guys what we do and how we are different from other technologies.

Karen Jagoda: So let's start by talking about the kinds of cancers you're focusing on. So we can get kind of a baseline and then we're going to talk a little bit about what you're doing that's just really exciting.

Asher Nathan: Sure. Thanks so much. So essentially our focus is on solid tumors. We have a platform that can be used for almost any solid tumor. But our first lead product which we call NAP is applicable to many or most solid tumors, but it has to have a certain antigen that's present on it called 5T4 and almost a hundred percent of lung cancer patients and kidney cancer patients and most breast cancer patients and list goes on. But there's many patients who could test positive for these 5T4 antigens.

Karen Jagoda: And really part of the story is it's all about the T cells and your T cell redirection technology, which when I was reading about it just really was intriguing. So I need to ask, is NeoTX really developing the next generation of anticancer treatment?

Asher Nathan: I guess time will tell. This is a fairly crowded field, there are so many companies in immuno-oncology and we don't know if ours is going to be effective yet, but we do know we're very different than all the other technologies out there. You know, you might have been interviewing other groups that do a CAR T or other immunotherapies. And I think the way that we differ from all of those is we're all about creating, in your body, a very natural immune response to the cancer. So other groups are doing things that the immune system really never had contemplate or never really does in nature. You know, that's kind of a problem, particularly when you don't really, we have a very, very sophisticated immune system. We don't really understand it one hundred percent and when you try to do perturb it in artificial ways, you never know what all the negative, unintended, consequences that will ensue from that.

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- Karen Jagoda: And so your platform differs in a pretty significant way. So tell us about how it works because I know it's complicated, but you can also explain it in a fairly simple way, I think just based on what I saw on your website. Yeah.
- Asher Nathan: Yeah. No, it's actually quite simple. I mean, when you, Karen, when you wake up in the morning and you have a cold, some bacterial infection, the first thought that goes through your head isn't, "Oh my God, I'm going to die." You know that even if you take antibiotics, don't take antibiotics, chances are excellent that your immune system will kick in and kill the bacteria. Unfortunately, that's not true with cancer. Because cancer is so similar to the normal healthy cells, it's very difficult for our immune systems to kill it. In our case, what we do is we simply coat the tumor with molecules that are bacterial in origin so that the immune system thinks, "Okay, this is a bacteria, I know exactly what to do. I know how to kill it." You know, billions of years of evolution have optimized that system and we just take advantage of what's already been done by nature so that we can, in some ways, turn a tumor into a common cold.
- Karen Jagoda: And part of what you were saying about the cancer cells, they also seem to morph or to change, to continue to confuse the immune system. Isn't that right?
- Asher Nathan: That's absolutely true. You know, most of immune drugs out there today have had issues with resistance as the immune system changes, sorry, as the tumor changes the immune system, the drug no longer works. And so that's also true in our case. But I think the difference is that we're kind of, by using the specterial type of immune response, are creating a very powerful, automatic reaction from the immune system. And what that does is you're kind of like a reboot on a computer, if you will, where you can reboot the entire immune system. So it could again, all of a sudden naturally see the tumor and, and kill it. I mean, you know, most of us, most people at some point or another, either had some cancer cells or precancerous cells, their immune systems are pretty good at eliminating it.
- Asher Nathan: People who have cancer are those patients where our immune system basically has gone wrong. So it's one thing to utilize the immune system to try to kill the cancer. But it's another thing entirely, I think this is second generation, where you want to basically reboot the immune system so the immune system could kill the cancer. And so when the cancer evolves and changes, the immune system will change with it and hopefully give the patient very long or maybe even a cure.
- Karen Jagoda: So your lead asset, you said was Nap, and how is it administered?

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Asher Nathan: It's an injection. So basically you inject it into the patient usually. Up until now it's been done in the hospital. There's one shot, it takes a couple of minutes and that's pretty much it.

Karen Jagoda: It's a one shot deal and it kind of tells the immune system what it needs to know.

Asher Nathan: Right. You need to repeat it four times, once a day. We go through cycles about every month, a patient would do this for a couple of months. We don't know exactly how many times they'd have to do it. However, one of the patients in an earlier trial who had very late stage cancer, now small cell lung cancer that had metastasized to the liver. Well that patient had taken the drug for six months and amazingly is still alive today, 11 years later, even though they had had no subsequent therapy of any kind.

Karen Jagoda: That's amazing.

Asher Nathan: Just a caution, I mean, obviously this is only one patient, but if this continues, this would obviously be a big breakthrough for us.

Karen Jagoda: So how many people could NAP potentially help?

Asher Nathan: Well, I think the numbers are very, very high. I mean, you know, the number one type of cancer is of course, you know, lung cancer and almost every patient would have the necessary target that we need in order for the drug to work. So yeah, I think this could help a broad number of patients and many different cancers.

Karen Jagoda: So how important is collaboration with other partners in this space? Because, from what I understand, it's very hard to get new therapies accepted because there's so much risk involved, et cetera, et cetera, et cetera, FDA approval. So collaboration's obviously part of the solution here. So what's your approach in getting this recognized as a potentially, sort of breakthrough, a new approach?

Asher Nathan: Yeah, so that's a good question. You know, we're a small, very small, biotech company and obviously there are some big giants that are, are working and some of them competing with us. So we thought we needed help from a big brother. So we have a collaboration with the AstraZeneca, who has another immunotherapy drug, and we combine our drug with their drug with patients. And we think that, at least in mice models, the two, one plus one equals three showed some synergy between the two drugs. So we're hopeful that it's not only the fact that they're helping us with the supply of their drug, but I think a major help to us has been their advice and they have a lot of experience in

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immunotherapy trials. So they're able to give us, I think, very good guidance on how to run these trials and how to do them intelligently and efficiently.

Karen Jagoda: And so let's just circle back. Your lead asset NAP, what phase clinical trials is that in right now?

Asher Nathan: It's, right now in a phase 1B. We're trying to figure out what's the maximum tolerated dose. And so we have that and that should take probably another half year. And once we have that, then we're going to go to different cancer types and test them out in different cancer types and see which ones work the best, which ones show the greatest promise and hopefully get some important data so that we can design for the trials, and go through registration.

Karen Jagoda: So you sound like an extremely patient man. And I'm wondering how you found yourself at NeoTX being sort of the captain of the ship there.

Asher Nathan: I am one of the founders of the company and in biotech you have to be very, very patient and it's a roller coaster ride. There are lots of ups, but then unfortunately there's also a couple of downs along the way and we're no exception, a really exciting ride, and we think we have a fantastic technology that's really exciting. On the other hand, it's because of all the competition there we've gone through times where it was difficult to get funding. Now we almost came close to shutting down the company a couple of times because of the lack of funding. And it's only because our investors believed in us and kept us going that we're still here today.

Karen Jagoda: And so what was your background? What was your basic training to give you access to this kind of knowledge?

Asher Nathan: So I'm a molecular biologist by training but I've been a serial entrepreneur I guess my whole life. You know, after grad school, I thought, I'm not sure anyone's going to ever hire me but at least I could hire myself. And I came up with some idea back then and I told my professor and he said, "Hey, you know, that's a great idea. Why don't you start a company?" And of course I had no idea how to do that. But he gave me the impetus and he gave me the support to try. And I think that, as an entrepreneur it's absolutely no shame in failing. There's only shame in not trying. And for me it's, I think the impetus here is not, it's not really the money. I mean we'd like to, obviously if we're successful, make a lot of money for our investors and we're happy about that. But I think, when I speak for myself and just about everybody associated with this project, from the inside the employees, I think the number one goal here is to really take a bite out of cancer. I mean, it's a horrible disease. And if we can do something I think I'd feel really good, if I use this even if it only helps a few patients in the end of

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the day if I know that the drug and all the work, it would all have been worthwhile I think for me.

Karen Jagoda: So last question before we run out of time. What can we expect from NeoTX in the coming year here?

Asher Nathan: So I think we'll have the, first of all, a maximum tolerated dose and then we'll be going out to many sites in the US and here or located in Israel. So it'll be both Israel and US clinical trial. And I think the excitement level from the investigators, at least so far, has been very high. So we're hopefully going to be able to recruit a lot of patients and hopefully be able to help a lot of those patients that we recruit.

Karen Jagoda: Thanks to my guest today Asher Nathan, CEO of NeoTX, that's N E O T X dot com. I'm Karen Jagoda and you've been listening to the Empowered Patient Podcast dot com show. Follow me on Twitter at Karen Jagoda. Like us on Facebook at Empowered Patient Radio. Thanks for listening and we'll see you next time.



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