Hear Here Podcast – Season 1, Episode 2: Dr. Deniz Baskent

Introduction

Karen Gordon

Hello and welcome to the Hear Here podcast. I'm your host, Karen Gordon, I'm an audiologist and senior scientist at the hospital for Sick Children in Toronto, Canada, and a professor at the University of Toronto. Our goal with these discussions is to explore new ideas that may help people use devices like cochlear implants to hear. Transcripts of these discussions are available alongside the recordings.

[Music]

Karen Gordon

Welcome back to the Hear Here podcast. I'm very happy to have another discussion with a wonderful colleague, Dr. Deniz Baskent, and to be joined by my wonderful cohosts, um, Dr. Sharon Cushing and Dr. Blake Papsin. Welcome everyone.

I think we're gonna have a treat today because we're going to hear from Dr. Baskent, who is a professor at the University of Groningen in the Netherlands. She's a fantastic researcher. She's an engineer by original training. And she has so much artistic energy, and it really starts right at the name of her lab. It's, uh, dB SPL, Deniz Baskent Speech Perception Lab, dB SPL, which is such a great representation of what she does, so let's hear from Deniz, Dr. Baskent.

[Music]

Deniz Baskent

I am very lucky and I'm actually thankful to my parents, they gave me the appropriate name. Uh, so, we were joking with our students from the very first batch, I have in my lab, and then we were saying yeah, we really need a name, like we cannot call ourselves, you know, audiological group focusing on speech perception with cochlear implants... that is not a name. What can we do?

And then I said, well in America people like naming their labs after the PI, so we can say "Deniz Baskent Lab" but that sounds really weird to me, that is not very egalitarian, let's say. And then when we were talking about that, we said oh okay, yeah, that sounds like dB SPL, why don't we name the lab dB SPL and it was perfect. What's so nice about it is that uh you're right, it stands for everything we are interested in, it's technical, it's related to sound, it is related to audiology.

Importance of relationships in the workplace

Karen Gordon

How did you come to speech perception from, from engineering?

Deniz Baskent

It was a trip in Turkey, I, I was studying electrical engineering because I always loved circuits and machines and I thought that's what I wanted to do. And then I went to electrical engineering, we learned so much

more about numerical methods and, you know, optimization methods, but I didn't gain a lot of hands-on experience. I did a couple of internships and just by luck they happened to be in biomedical engineering companies, consultation companies. I said okay, this is, this is my calling, I have to go into medical devices.

And then I started switching to medical devices, and then I was looking for my PhD for a topic, and to my luck, my PhD advisor, he had some space in his lab. I said okay, it was something with humans, and then, I'm very lucky, I, what I found. I'm in love with it. This is such a great field so I went to Bob's (Bob Shannon) lab and then I met everyone in the lab and it was such a friendly place.

Once I started in the lab, I realized, oh it is also a very famous and very high level of great quality scientific place. So I was very lucky. At the time, it was in a building where different floors were dedicated to different kind of research. So one floor there was Physiology, another floor it was more, you know, uh imaging cortical measurements and things like that, uh our floor was purely cochlear implant research.

The group has been always very fun and I really believe in the fun element as well. You know, even when we have a scientific problem, we always found a way of let's say, you know, we would work very hard and then we would go get margaritas and then have a chance to also connect on a personal level. And I, I really truly believe you work better this way, because... yeah, you know each other better, then you can, we can ask for help, we can help each other where it's needed.

[Music]

Karen Gordon

Deniz has a really nice sense of, um, how her lab works and she told me that she and her lab always have lunch together. Uh, what do you think of that?

Blake Papsin

What's lunch?

Sharon Cushing

Yeah, I think it's wonderful! You know, and I think it speaks to what's gotten harder with COVID, you know, COVID's created a disconnect in some ways. We really need to make an effort to include that again because I do think that those informal times spent together are immensely important.

Karen Gordon

I totally agree, and I think that when I was listening to um Deniz talk about her work, she's so motivated by those connections between people. I would like to speak to more people in person, um, than we have over the last year and half for sure.

[Music]

Importance of studying speech perception

Karen Gordon

Let's go back to Deniz and hear more about her lab. In this next section, you'll hear her discuss her work on speech perception.

Tell me why you're so interested in speech perception, why do you think it's so important to study?

Deniz Baskent

Speech perception is a window to the outside world. This is one way, as a human being, we can stay connected to the others, and that is a very huge need we have, we want, we are social animals and we want to stay social and speech is a very good tool for that. So, this is the short answer, but of course there's a much bigger answer in that.

I also like uh the signals itself, what you can do, speech is a very rich signal. When you look at it, there's redundancy, you can extract information in the temporal domain, frequency domain, it is just amazing to see how we as human beings develop the ability to produce such a complex signal. Our body can produce that. And then we also develop a system that can receive it, code it, encode it and then extract meaning out of it. So, I find the whole chain of communication very, very intriguing. How do we even do that?

Um, what makes it so important to recognize who we are talking with, in what state they are with. I think we get safety feelings out of that, because now we know in what kind of situation are we in. These were also the things we were after, you know, like not only what do I do with my voice to communicate, which words I choose, but also how do I communicate, and what does it contribute to the conversation?

Karen Gordon

So, through your research, what do you think it is that we're connecting to in the voice? I want to understand from your perspective, what you think is really important, that how... what do we connect with most about the human voice?

Deniz Baskent

I think the very first thing that happens is just knowing who's talking. I, I think this is the very first thing, just knowing if it's a familiar voice, or unfamiliar, because this sets the tone already right away, how I'm going to deal with this communication, because if it's someone you are very casual with, you know, you're going to choose your words, you're going to choose your tones accordingly.

And I think right after, comes uh the effect, the emotional state the person is in, because there's also what we are gonna determine how we are going to continue with this conversation, should I take it slow, should I take it easy, can I bring up this problem I have with them, or should I postpone? And so, this is, all of that determines the context. Uh, and then after that, I think comes, actually the expression of the language and the content of the language.

[Music]

Karen Gordon

We have to still recognize that for people with hearing loss, they have difficulty accessing those beautiful acoustic components of speech out of their cochlear implant devices. Sharon, what do you think?

Sharon Cushing

I think this is something that's hard for someone who has normal hearing to-to understand, um but I think what really hits it home to me is you know when we run our team group here, with our, um, with our social worker, and these children talk about the challenges they have with communication and engaging people

in communication. And you know, much of that is as a result of the decremented signal, or you know being worried about getting it wrong in-in a vulnerable social context, so I think that it's really listening to what their challenges are is probably the best way for a normal hearing person to understand.

~~Karen Gordon~~

~~That's so important, how we connect to each other, the speech that makes us, um, come together as people.~~

[Music]

Improving speech perception in people with hearing devices

Karen Gordon

In this next part, we are going to move into what Deniz is working on to try to improve speech perception for people with hearing loss using devices like Cochlear Implants.

Deniz Baskent

It started a little bit anecdotally, because even though I'm an engineer, I work in a clinic in Groningen, and I really liked it because, that makes, gives me the chance to work with patients' day to day, and also with their clinicians so I can actually work on problems that could be relevant, I'm hoping it will be relevant, to patient population.

And uh so, we regularly have patient evenings, where we can present some of our research, but we can also get feedback from them, and I really like that because some research ideas come from that, and VOICE was a little bit like that.

Uh, we had one of these evenings, uh with cochlear implant users of our clinic, and uh when we talked about our ideas about voice perception, they started saying things like, “well, I cannot really hear my grandchildren voice and it really bothers me”. So, we thought, wow, you know, we take it so for granted, imagine you cannot hear your child’s or your grandchildren’s voice, what a loss is that. So, uh we made notes of all of these questions and um anecdotal problems that we heard from our implant users. And then we try to shape our research around it so we can actually, really study those problems that they told us.

These are people who also have vision loss, so we were working with, again with a group, who have both, a lot of things are very difficult for them. They said they had a big problem hearing the emotional state of the talkers, so that made them very nervous in conversations, and then they have hearing loss. What can I identify? What is really missing? What acoustic cues, visual cues? Uh, and can we teach people- can we either make the devices better, or can we teach people with some new rehabilitation training techniques to recognize those better?

Karen Gordon

~~Provided cochlear implants access to the sounds and speech, we were so excited but the- some of these more subtle cues, around the emotion in the voice are harder.~~ Why do you think that these are um difficult cues for them to understand?

Deniz Baskent

Yeah, for implant users, it is a bit easier to, to know because we can look at actually the acoustic cues that are missing from the implant part, or we can manipulate it in the signal ourselves. Uh, so, for the emotions, in general, I think it comes down to general difficulty of hearing, you know, pitch-pitch, some of the pitch variations, they can understand some of that, but some of the other voice cues that the device doesn't yet deliver very well.

And I don't want to say the device doesn't deliver, because it is really not the device's fault, I know the manufacturers they use high tech chips. But there is something in the electric stimulation of the nerve, that differs from the acoustic stimulation of the nerve. We just cannot replicate it yet, we just don't know how, how we should do it.

Using robots to investigate speech perception

Karen Gordon

I was really intrigued because of course there's going to be limitations of what the device can do. So, how can we help beyond the device?

Deniz Baskent

We are really racking our brains. What can we do, go- to go around this limitation? On the device part, we did a couple of projects, with uh-uh collaborators, who are really into new ways of signal processing, new ways of stimulation techniques. And, we gained some small steps in that, so, there are some little tweaking things we can do still in the device that can perhaps make voice perception better, but there's a hard limit there with the current technology.

Um, on the rehabilitation part, we, we try to be very creative, what can we do to help people to hear the cues so that, that are there, if you're a child, and if you never learned how to hear otherwise, you can actually learn these cues, how to make use of them. Even if they are degraded. But I think with adults, what happens is you have a lifelong of learning through the normal means so, acoustically how it sounds and when you get the device, you have to forget everything you learned and then replace it. Takes much longer to adjust or doesn't even know how to adjust.

So now we know, maybe there are more cues that people can learn. We said, okay what fun ways can we have to really engage and encourage people to learn? Because I don't think it is just going to be sitting in the clinic, hours and hours, and listening to one voice after another. We will do some music lessons, piano lessons, and then see, can we actually, in a fun way, in an improvisation jazz way, can we encourage implant users to listen more, produce more, and then maybe map it with their fingers and things like this?

The second thing we did is, we bought an Android robot because I also have a Master's degree in, in robots and I always wanted to go back to my roots. I saw a great opportunity, I said okay, now we can make use of that, combine everything. We use the robot as an interface for more fun training. So, the robot makes a funny dance and talks to people “Hey, come on, you can do one more time, high five, you did so well!”, and we are hoping that engagement factor basically we can maybe encourage people to do more fun things so they can push the limits of what maybe, maybe normally they wouldn't have the need to learn, but we can encourage them to do something a little bit more.

Karen Gordon

Is this um going to...it's a simulation of another person, um is it on screen? Is it an actual robot?

Deniz Baskent

Sam and Robin, they're Android robots uh from NAO robots, uh so they really look like little children, they are cute, little in size, they have a very big head. We can have the embodiment, so basically, a machine that people can actually convince themselves is actually a bit of, you know, human. We can program them to speak in a way that we want them to be. We can also make them semi-autonomous, so that makes it fun so they also blurt out something random in the middle of a session and everybody loves that they can make a lot of movements. That's fun because they can do it, dance, or tai chi, in the middle of a session again. So, when people are bored, we have all these tools to gain them back.

And then, they have a lot of sensors, so we can also run experiments. We can do rehabilitation. For example, they have a sensor on, on each hand, and on the head, and we do run some psychophysics experiments, ~~you know, they hear three voices, and they can enter what they heard is different than the others by entering, you know, pressing a button on the head.~~ It's very engaging, and children also really like it, so we are hoping that, maybe we can, you know, work with children more than five minutes beyond their attention span just having the help of a robot.

Normally we wanted to go in a more controlled way, as well, so we were going to start in a lab with real lab-controlled experiments, but like everywhere else we were hit by COVID and then when we were hit by COVID we said, actually maybe the robot would come handy here because it's not a human. It's, it's a, a machine so it has no risk of COVID for anyone. We implemented, right away, some of the clinical tests~~, uh for example, digits in noise, or uh uh speech audiometry, and some of these things we implemented on the robot, and the robot came with the conditions to the room.~~

Our robot expert here, Gloria, she goes there with Robin. We are looking, does it contribute something, does it make the child happy, uh could it lead to a point where we do other things while the robot is running the test? So, we are looking at all of those logistics; is it practical, do children love it, uh and how can we streamline it with our clinical colleagues so we can make life actually easier for them?

[Music]

Karen Gordon

I think people will um be interested that um there's marriage between the clinician and the robot, ~~there's not an idea of one taking over um from the other, it's really an enhancement. We are now learning about new ways to do things.~~

~~Deniz Baskent~~

~~So, we are looking into these ideas. Can we also send the robot maybe to waiting room or pre- or post-diagnostic tests? Can we, you know, because maybe people would like that, maybe it will encourage people with more advanced dementia to be more engaged. The sky is the limit.~~

Karen Gordon

Do you think that you can provide enough in the voice of the robot, to give it that human ability to produce emotion that we can connect to?

Deniz Baskent

With robots who can do emotional gestures on their face...so these robots are developed for this purpose and the idea is to help, uh maybe, children with this autism spectrum and things like that. And for most of our children, to encourage them for the same idea, from either gestures, or from the voice ~~that we could elicit good responses from our patient population. So, we were a bit mixed about that... Everything else, voice perception... The emotion part, I'm a bit cautious about it. I'm not so sure yet.~~

Karen Gordon

I guess what you're saying is robots will help, but they're not going to be a replacement for other human.

Deniz Baskent

~~Would they ever replace the human? And~~ my answer was always no, I think we always need human clinicians, human therapists, human teachers, human everything, human friend. All of our clinicians, sometimes, they're, they see too many patients and they don't have enough time. Can we give them a hand so they can actually focus on-on-on the actual human patient interaction? And then we can give them the numbers they need, but still we need them to make the right interpretation right customization of the therapy that is very important.

[Music]

Karen Gordon

But you know, people always worry about this idea that we're going to have robots doing our jobs. Can we really interact with a robot?

Sharon Cushing

I think you use robots for what they're good at, right? Um, and what I loved about Deniz is the idea that it's not only about getting better programming, and in order to, to gather that richness that we have in speech, but also training the brain to hear it better using what you got.

Um, and so, I think again if a robot can help you get that therapy and potentially deliver therapy in a way that is better for our families, then that's a great way to go about it. Humans can do what humans can only do, which is that, that human connection component.

Blake Papsin

No, it's, it's weird. Uh, like these, these game companies, I don't know, any game company, EA sports or something like that, they have a room full of geniuses, working on making sure that the, the arm moves the right way as the ball is thrown in the football game, and they work on it so it's realistic, it's perfect, it's great, and why do they care? Yeah, they wanna engage the audience because then they'll sell more products because it's more realistic. And if we had just one room of those geniuses to make an interactive paradigm to either map or test speech perception, we'd be off to the races.

Karen Gordon

Yeah, I think, you know, the main point about, you know, incorporating um machine learning, whether it be through a physical robot, or an algorithm or, whatever it may be, um as a way to create efficiency, so, do things that we actually would take a long time to do and free us up to do other things.

Sharon Cushing

And, and I think if, you know, one thing we learned during this pandemic is that, you know, our ability to continue to care for patients, was with a capacity to shift the point of care, right? And technology, whether it be robots or otherwise, allows us to do that. So, bring the programming home to them, um and again, then we can use our clinical time to do other things that we can only do.

Karen Gordon

Yeah, that's what I had talked to Deniz about at some point too, is like well, maybe we could just ship a robot to their house. The pandemic has made us have to think about bringing, um, our services out from the hospital to, to people's homes.

Blake Papsin

It,-it's just a matter of time.

[Music]

Importance of getting feedback from Cochlear Implant users

Karen Gordon

So now, in the podcast, we'll turn away from robots and the pandemic and think about good conversation, connecting with Cochlear Implant users and music.

I love your idea of meeting with the, hearing loss population, adults, children with hearing loss, tell me a little bit more about those nights.

Deniz Baskent

It is always a brainchild of our clinicians, uh very research, mind-oriented clinician colleagues. Once in a while, every few years, they, they say okay now it's time, we have to organize one of these evenings, and then we decide together which projects we want to highlight. Of course, we have, any given time, we have thirty, forty, fifty projects, not only me but the whole department.

We also talk about new projects, so that we can actually advertise it and also get their feedback. So, we do a nice, very fun, you know, short presentations, easy to understand, and accessible, and it's very nice. And then we have a chance to make them proud, we always tell them look, your contribution led to these conclusions, thank you so much, you can be very proud of yourself, and we really appreciate it. So, they also get to see that first hand.

~~[Music]~~

Karen Gordon

I really love what Deniz is talking about here, getting input from her colleagues and the cochlear implant users. I think it's so important and I know that it's inspiring to our group as well. Blake, do you have any comments?

Blake Papsin

Human perception as the basis of her engineering paradigms, which is, uh, I find incredibly inspiring and, and innovative, so that, that's really good, at least it's not more, sort of, um having a computer try and emulate what perception is, because it's not possible.

Music

Importance of music perception

Karen Gordon

It's not surprising to me that Deniz has done work in music perception and that she continues to try to bring people together, even her own lab. She brings them together through musical activities, um for example, they all get on stage at some conferences to sing and just be together and connect. So, I pose this question back to Deniz and asked her about this more.

Deniz, you always come to conferences and you have your whole group performing together, tell me what music means to you.

[Music]

Deniz Baskent

We bonded so well, Karen, you and I have the tradition we sing together, and I think we will continue forever and ever. I like listening to music and all of those things. Music can elicit emotions in you, you can express your emotions very well, it can touch you, it can help you to process something very sad, very happy, so, there's that part already.

My group, I really believe that, we are not only colleagues, but we are colleagues, friends. My personal choice, I like being friends with people that I work but also, I think it really helps, helps the group dynamics when they know each other in a friendly way. So, all these music activities, and things like that, I see it as part of that, we do something together, we choose a song, we have to practice, we have to carry it together and none of us are really professional singers here.

~~[Music]~~

Karen Gordon

Are you also interested in music for people with hearing loss?

Deniz Baskent

Music activities for hearing impaired people... There are a lot feelings about it, in the field, from professionals, I know that, so, one group of people, they think there is not very strong evidence that we gain much from music training with hearing impaired populations. So, these people think it could be a waste of time and resources.

Karen Gordon

Mmm.

Deniz Baskent

But I am not one of them... I'm on the opposite end, I'm thinking, I think, even if I, if I cannot have very strong scientific evidence, maybe I cannot increase speech perception in noise, maybe I cannot make voice perception much better in a way I can measure in the lab

But if I can make someone happy, and encouraged, you know, they, and we, and, I totally heard feedback like that, they say, “oh you know what? I can hear my partner's voice better”, “oh, I actually learned how to pay attention to somebody’s voice in a crowd”, or they say “I had stopped listening to music but now I'm encouraged and I'm, I'm re-finding re-inventing the pleasure of listening to music.” So, to me, it's also a gain.

We tried this music learning method with piano, and they said “oh now I go to a party, I see a piano, I sit on it, and I just play a few melodies, and people come and talk to me, and I love it, it gives me a chance to talk to people, and they're not afraid to talk to me, they see my device, but they are not afraid.” In my opinion, it's worth to put effort into these programs.

[Music]

Karen Gordon

I think this is a really interesting perspective on music perception, Sharon what do you think?

Sharon Cushing

One comment about music from the non-musician's perspective, and Blake can probably give us the musicians perspective, it seems to me that from a research perspective, music is good for everything. So, anytime I hear a study about incorporating music in terms of any kind of training, whether it be balance, whether it be speech perception, it's always good.

Um, you know, for, for pediatric development, I heard at the CI Conference that music was good for my boy and I signed him up for ukulele lessons. It's a really powerful tool and one that comes with social engagement, and again can be very powerful from a therapy perspective. So, I, I do think that it is, uh you know, something that we should tap into.

Karen Gordon

I absolutely agree with that.

Blake Papsin

Um, I got cold when you talked about conferences because um those days might be gone. They might be gone; we might have to socialize locally and educate digitally. As an old guy, it's not my problem anymore, but we're killing this planet flying around in airplanes to visit with each other. So, maybe it is time to redouble our local efforts of socialization and uh-uh communal, and find better ways to communicate, group to group. Uhm, but that's pretty radical and I, in fairness, it's well beyond what you're asking me to talk about, but it's on my mind.

Karen Gordon

So, you're saying with this podcast we're saving the planet.

Blake Papsin

That's exactly what I'm saying is like we do, we, and, and, and that has to evolve to even be, uh you know, some more interactive and more present, more holographic, I agree, because um we have to try and do what Deniz is doing with her lab, that communal sense of common purpose, we can no longer do it now, at, at the end of a transatlantic flight. I don't think it's physically possible that we can sustain a world for our children, let alone our great, great, great grandchildren, or as the Aboriginal Canadians thought of, can we preserve it for seven generations forward? And I think we have to start thinking that way, even as scientists and clinicians.

[Music]

Deniz's advice for young people searching for a career

Karen Gordon

So, in this last part of the podcast, we transition from thinking about a sustainable world into what we're going to-what young people will do, uh, and what advice Deniz has for young people based on the experiences that she's had as a researcher.

[Music]

Karen Gordon

What careers should they be thinking of in this new era, in this new world, and hopefully post pandemic world, What do you think, Deniz?

Deniz Baskent

Bob said it is time for you to do your find your own way, he would always tell, tell us, we can only have good advancement in science if we talked to each other, so he encouraged us, so, he never, he always said don't keep your ideas to yourself, there's no value in it. He was like don't worry, the ideas are cheap. I didn't believe him at the time, I was like, I was certain I had one idea that there would be no second idea ever. Uh, but he was right, you just need time, go to conferences, interact with people, so, this is also my advice, I think you have to interact with people, so it is not good enough to go to talks and take notes.The more you talk, some of the best ideas came.

[Music]

Karen Gordon

After hearing what Deniz has to say, what do you both think career choices will look like going forward?

Sharon Cushing

I'm going to be interested to see how, you know, the pandemic changes career paths because, you know, careers don't look the same anymore. You know, for me, I was grateful to be in health care during a pandemic 'cause I got to go to work every day, and I got to see other humans, and feel their presence. And, I think that you know, I, I would imagine that those people who are going into healthcare now, you know, are thinking about it in the context of a world that just is in the midst of a pandemic, maybe some people will choose to do it where they wouldn't have otherwise, and maybe others won't where they were going to.

Blake Papsin

And so, I think the secret is to get people doing what makes their heart sing, this is we don't need it all, we have it all. This life is passing quickly, and we should do what we love, and when you get down to it, you know I'll look back at my career, and that's all I did, is look after people, as a human, I looked after other people, and tried to make their human experience as good as I could, reasonably-reasonably fulfilling some of their dreams. That's good enough.

Karen Gordon

~~But for me, when~~ Deniz says something really interesting, uh in this conversation, that one of the limitations she felt about, you know, going into a career as an independent scientist was “what if I don't have any innovative ideas? I had one good idea, that's it”.

Blake Papsin

It, it, it's true.

Sharon Cushing

I loved that comment that she made about never having another question, 'cause it, it showed you know the vulnerability, and it was a very tender thing to say, and I can imagine that, you know, as someone trying to figure out if they wanted to do research, how that would resonate, and, you know, throughout my training, there were several times where I thought about “do I want to be a clinician?”, or “do I want to do research?”, and I'm not sure I ever had the courage to be a researcher. Um, the clinical pathway is much more defined and being a researcher is courageous, and I think that one of the things the pandemic has also taught us is that research is an essential service because we can't make clinical advances without it.

[Music]

Karen Gordon

So, I hope you’re all with us still and that you are enjoying, uh, this podcast. The discussion has really been inspiring, in my opinion, we’ve spoken to Deniz Baskent about her lab dB SPL, ~~so Deniz Baskent Speech Perception Lab at the University of Gronigen.~~

We touched on so many different areas; the importance of voice and communication, uh, the aim to improve access to speech sounds and that communication through Cochlear Implants, the connection between researchers in a lab and to Cochlear Implant users, themselves, the use of robots and how that might help in research and in the clinic, uh, the importance of, um, career aspirations, thinking about a new world beyond the pandemic, a sustainable world, thinking about the importance of music and the access and engagement with music. And so, it's time for us to say goodbye to, uh, Dr. Deniz Baskent, a really wonderful person and a great researcher.

[Music]

Karen Gordon

It has been so wonderful to hear what you're doing, to experience your lab in this way, and I want to thank you so much for doing this with me.

Deniz Baskent

Thank you, Karen, for giving me the chance and also spending some more time with you.

Karen Gordon

It was an absolute delight to speak with Dr. Deniz Baskent here on our second episode of the Hear Here podcast. You can catch other episodes of the Hear Here podcast, there's a link on our website, search Archie's Cochlear Implant Lab Sickkids Research Institute, or wherever you get your podcasts.

The Hear Here podcast is put together by me, Dr. Karen Gordon, with my colleagues at the hospital for Sick Children in Toronto, Canada, Drs Blake Papsin and Sharon Cushing with a tremendous production and advisory team, Sofia Olaizola, Rachel Bedder, and Maria Khan.

The wonderful music was composed and performed by Dr. Blake Papsin.

[Music]