Kessler Foundation Podcast Transcript: Transforming Care and Recovery for People with Spinal Cord Injury

Recorded June 2019. Listen to it here.

[music]

ANNOUNCER: 00:04

Welcome to Kessler Foundation's 2019 Evening of Discovery and Discussion, a panel discussion about our spinal stimulation research. Joining us this evening is panel moderator Steve Adubato, PhD and distinguished panelist, Gail Forrest, PhD, Director of Kessler Foundation Center for Spinal Stimulation, Steven Kirshblum, MD, Kessler Foundation's Chief Medical Officer and Codirector of the Center for Spinal Stimulation, Guang Yue, PhD, Director of Kessler Foundation's Center for Mobility and Rehabilitation Engineering Research, and research participants Natalie Barrett from New Jersey, Jimmy Brown from New York, and Kelly Thomas from Florida. Let's listen in.

ALEX GIAQUINTO: 00:49

Good evening, ladies and gentlemen. My name is Alex Giaquinto, and I am the current chairman of the Kessler Foundation Board of Trustees. On behalf of the board and the CEO, Rodger DeRose, I would like to welcome all of you to this year's research evening, an evening which I am confident you will find not only informative but filled with hope for the future for people with spinal cord injury. It's really great to see so many people at this meeting. Tonight you will hear from our distinguished research scientists about groundbreaking research in the area of spinal cord injury. Research that will help people with such traumatic injury to regain function, and in the case of spinal stimulation, achieve what was once thought impossible, to walk again. This distinguished panel with whom you will meet later will discuss two groundbreaking treatments: transcutaneous and epidural stimulation. This kind of groundbreaking research and research excellence does not occur without the continued effort of the dedicated group of researchers at Kessler Foundation, and of course, it can only happen through the generosity and support of donors like you.

ALEX GIAQUINTO: 02:10

Your philanthropic support is essential to furthering this type and all other types of research, which Kessler Foundation is or may become engaged with. Your support can help bring this treatment to people who need it now. Since I joined the board, I have been actively involved in the research activities of the foundation, especially while Chairman of the Research Committee. All the members of the Board of Trustees are strong supporters of the mission of the Kessler Foundation, and they do it with both their time, their treasure, and their talent. Philanthropy, although eagerly sought, is gladly given by all board members, and it is one of the reasons I am so very proud to be the chairperson of this august group. My wife Liz and I are and will continue to be passionate supporters of Kessler Foundation. I am hoping that after tonight's program, you also will join us in support of this program and the Kessler Foundation. It is now my great pleasure to introduce Dr. John DeLuca, Senior Vice President for Research and Training at Kessler Foundation, and Research Professor in the Departments of Physical Medicine and Rehabilitation and Neurology at Rutgers New Jersey Medical School, who will tell you more about tonight's program. John?

[applause]

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JOHN DELUCA: 03:43

Thank you, Alex, for the introduction, and good evening, everybody and welcome. We're here tonight to talk about spinal stimulation and how this groundbreaking treatment holds the promise to transform care and recovery for people with spinal cord injury. So let me start with a few facts. So more than five million Americans live with some form of paralysis as a result of stroke or multiple sclerosis or a spinal cord injury, for example. And about 300,000 people in the US live with a spinal cord injury. Each year, almost 20,000 people in the US sustain a spinal cord injury. Car accidents and falls account for nearly 70% of those injuries. But listen to this. Less than 1% of those who sustain a spinal cord injury experience complete neurological recovery by the time of their hospital discharge. Less than 1%. Which means they live with spinal cord injury for the rest of their lives. You see, the idea of recovery from spinal cord injury is a dream that people thought would not come through.

JOHN DELUCA: 04:58

But now, breakthroughs in spinal cord stimulation are making the dream of recovery more than just a possibility. Now, we can envision a future in which that dream can come true. So with the support of our donors, the Kessler Foundation researchers help people with spinal cord injury recover function and rebuild their lives. Our researchers seek new technologies, and that's the key, seeking the new technologies to get these technologies into clinical practice. That's what we do. They evaluate the latest technologies and treatments for spinal cord stimulation, for example, or robotics to maximize the ability to regain lost function. So we're all looking forward to hearing the details from our expert panel, three researchers and three participants. You'll learn tonight that recovery from spinal cord injury is so much more than just walking again. So without further ado, it's my pleasure to introduce our distinguished panel moderator. Dr. Steve Adubato is a broadcaster, author, and motivational speaker. He's an Emmy Award-winning anchor on our local PBS stations and a syndicated columnist. Steve has appeared on The Today Show, CNN, MSNBC, Fox AM 970, SiriusXM, NPR as a media and political analyst, probably everywhere else as well. So please join me in welcoming Steve Adubato.

[applause]

STEVE ADUBATO: 06:38

Good evening everyone.

AUDIENCE: 06:40

Good evening.

STEVE ADUBATO: 06:41

It is my honor, my pleasure to be a small part of a big night. It was mentioned before that our crew from public broadcasting is here. And Rodger and I have a lot of these offline conversations about what could make a difference? What can we do in the world of public broadcasting at WNET in New York and JTV in New Jersey, as well as WHYY in Philadelphia? We have all these different partnerships to distribute content, and I will just say this for myself, and I know I represent all of our colleagues at PBS. I'm not here to make a speech. I'm here to facilitate a conversation. But I don't know about you, but to me the idea that we will have the discussion tonight about groundbreaking research, about people making a difference in the lives of other people who are brave enough to step up and say, "I want to be a research participant," and the researchers who are driving this through the foundation, and

the Center for Spinal Stimulation. For me as a broadcaster, for me as a human being, for me as someone who just wants to try to be part of the solution, I am not interested in the latest poll. I am not interested in the 2020 election and who should be impeached and who shouldn't. I am interested in a meaningful discussion about things that matter in people's lives that you're not going to find anywhere else. And if it were not for Kessler Foundation, if it were not for this center, if it were not for this discussion-- I just interviewed everyone who was here, and I will tell you, when we put on that programming, it's not about us. When we interviewed the three research participants, and they tell their story, and then you meet the three researchers that we had tonight. I will tell you, our audience at PBS is going to be better for it. And that would not happen if it were not for Kessler Foundation, so I'm going to say thank you very much. Thank you, Rodger. [inaudible].

[applause]

STEVE ADUBATO: 08:41 So this is an honor for me, and I'm going to introduce our colleagues tonight. First, I want to introduce Dr. Guang Yue, who is Director, Center for Mobility and Rehabilitation Engineering Research Kessler Foundation. Put your hands together for Dr. Yue.

[applause]

STEVE ADUBATO: 08:59 Earlier as I said, I had a great conversation on camera with Dr. Steven Kirshblum, who is Kessler Foundation Chief Medical Officer and Codirector of the Center for Spinal Stimulation. And Kessler-- I cannot believe this is all on one business card. And Kessler Institute for Rehabilitation Spinal Cord Injury Program Director, and the Senior Medical Officer at Kessler's West Orange office. Put your hands together for Dr. Kirshblum.

[applause]

STEVE ADUBATO: 09:26 It is my honor now to introduce Dr. Gail Forrest, who is Director of the Center for Spinal Stimulation here at Kessler Foundation. Put your hands together.

[applause]

STEVE ADUBATO: 09:36 This young man, I had a chance to meet before. He's all the way from Staten Island [laughter], but we welcome him here in New Jersey. His wife is here laughing, because she knows the kind of dynamic personality that Jimmy Brown is. In fact, Jimmy was born not Jimmy but James, and your son is now the fourth? Is that correct?

JIMMY BROWN: 10:03 Correct.

STEVE ADUBATO: 10:03 Is it Jimmy or James Brown IV?

JIMMY BROWN: 10:06 He's James Brown IV.

STEVE ADUBATO: 10:07 But this is Jimmy Brown right here, Kessler Foundation research participant. He actually sustained a very serious spinal cord injury in 2004, and the story he told on

camera, the impact that he will make is huge. Please put your hands together for our new friend, Jimmy.

[applause]

STEVE ADUBATO: 10:30 It's interesting. We have two other participants in the discussion, both of whom were so powerful in the interviews that we did. And they're very different stories but their reasons for being here, their reasons for being research participants, not very different. But they'll share for themselves. First, I want you to welcome Ms. Natalie Barrett, Kessler Foundation research participant, sustained a spinal cord injury in 2015. Put your hands together for Natalie Barrett.

[applause]

STEVE ADUBATO: 10:59 Natalie wants everyone to know that her entire family's from Jamaica, but she's the only one born in East Orange, New Jersey. So put your hands together for Ms. Barrett.

[applause]

STEVE ADUBATO: 11:14 Now Kelly Thomas was not born in East Orange, but she was raised on a farm. And I was in Newark, and we didn't have farms growing up. That was a joke. I mean, you get the whole idea. It's called Brick City for a reason. Ms. Kelly Thomas, who joins us. She is a research participant at Kessler Foundation. In 2014, she sustained a spinal cord injury, went from Florida to Kentucky for this research, and I am so confident of what she will share along with her colleagues. So put your hands together for all of our participants tonight.

[applause]

STEVE ADUBATO: 11:51 Let me kick this off. Before you see some interesting video that will show our research participants and a little bit of their story, I'm going ask Dr. Forrest and Dr. Kirshblum, if you had to describe what spinal stimulation is, in layperson's language-- I should also disclose, I do a fair amount of leadership and communication coaching here at Kessler Foundation with very smart people who scored a lot higher on their SATs than I did, and so one of the challenges - they're so smart - is breaking things down so that some others of us can understand. So if they are not good, don't blame me. It's on them. No. So here's what I'm asking for. A layperson's description that we can all take from this as to what spinal stimulation is. Gail, you're up first.

GAIL FORREST: 12:38 Actually, we spoke about this, but. So spinal stimulation is the-- you'll only hear about two forms today, but the words-- it basically explains what it is, and you're stimulating the spine. Now with Jimmy, you're stimulating the spine-- actually, I shouldn't steal the thunder, but-- on the skin, transcutaneously, and then you're going to hear about epidural, where the electrodes are implanted into the lower part of the back, and that's epidural stimulation, but--

STEVE ADUBATO: 13:10 Try that again? Epidural is inside the skin.

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GAIL FORREST: 13:14	Right. Implantation, right? Implantation. Let me just use the word the dura, the cord. That's epidural stimulation, and transcutaneous is superficial. But the basic concept is that you are stimulating the spinal cord, the spine, the spinal cord.
STEVE ADUBATO: 13:31	Want to jump in, doctor?
STEVEN KIRSHBLUM: 13:32	Yeah. I would say that the-- think of spinal stimulation as a constant jump-starting of a battery that's extremely low in charge and won't function without it. After a spinal cord injury, the spinal cord is damaged. It's weak. It's bruised. And it's not able to carry out its roles, and its roles are very complex, way beyond what people used to think just a few years ago, that all it was was a pathway of transmitting information from the brain to the organs into the muscles of our arms and legs. What the spinal cord is, is it allows for relay of information, but it could also modulate or act on its own. So spinal stimulation or neural modulation is key--
STEVE ADUBATO: 14:21	What was that second--? Neural modulation?
STEVEN KIRSHBLUM: 14:22	Neural modulation. So think of a [crosstalk]--
STEVE ADUBATO: 14:24	You remember what I said before about--?
STEVEN KIRSHBLUM: 14:25	Neurologically able to modulate activity. Here's the key. That it allows the spinal cord, by giving it some stimulation, to act like it's supposed to, specifically, this. And hopefully this will get it. The constant charging of the spinal cord, revving it up so that it can do the activity, the automatic activities, the carrying out the functions that normally would happen, can come back to more like normal before the injury.
STEVE ADUBATO: 14:57	Jimmy, let me ask you, before we go to this video that shows you and your colleagues before spinal stimulation. Are you okay with that description?
JIMMY BROWN: 15:06	Yes.
STEVE ADUBATO: 15:06	Do you want to add anything?
JIMMY BROWN: 15:09	No.
STEVE ADUBATO: 15:09	Good. So here's what we're going to do. As my old friend Warner Wolf used to say when he had a job-- he's a great-- you know how it goes, right? What does he say?
AUDIENCE: 15:20	Let's go to the videotape.
STEVE ADUBATO: 15:21	Let's go to the videotape. This is a videotape of Jimmy, Natalie, and Kelly before spinal stimulation. It speaks for itself. Let's go to it.
STEVE ADUBATO: 15:31	Kelly, let me start with you. What do you see when you see that video, think of?
KELLY THOMAS: 15:36	A lost life.
STEVE ADUBATO: 15:38	But what you told me when we talked-- if I have this wrong, you'll tell me. You asked the doctors, "What are the chances that I could walk [inaudible]?" I think you said the

	doctor said you make sort of a sound like, [inaudible]. And then said, "Maybe 1 or 2 percent." Am I correct?
KELLY THOMAS: 15:57	That's what he said.
STEVE ADUBATO: 15:58	And what did you say then, Kelly?
KELLY THOMAS: 15:59	I said, "Okay, I'll be your 1 or 2 percent." And I kind of smirked.
STEVE ADUBATO: 16:05	1 or 2 percent. He didn't know you, did he?
KELLY THOMAS: 16:10	He didn't.
STEVE ADUBATO: 16:12	And so talk about your experience as a research participant and how it has helped you regain some movement, in a way, and some mobility that you did not have before. Talk about it.
KELLY THOMAS: 16:29	Well, my neurosurgeon told me I would never walk again, and I thought he was right for a long time. Because I regained the ability to stand, but I wasn't able to walk. And I applied to a research database, and I was accepted as a participant. And I tossed the idea around very thoroughly, talked it through with my family, my doctors, prayed about it a lot. And I decided to go through with it, and it was one of the best decisions I've ever made.
STEVE ADUBATO: 17:09	Because?
KELLY THOMAS: 17:10	Because it took what was told that I would never do and made it possible for me, which is not only standing, but walking and doing things independently and working towards a better life. It's not only just the standing or walking. It's done a lot more for me than just that.
STEVE ADUBATO: 17:34	Natalie, for you, describe for folks your injury first.
NATALIE BARRETT: 17:41	Four years ago, March, I was hit by a car. I was driving. I was hit from behind, and the airbag broke my neck. So my level of injury is C6-C7, and they fused it back together. And when I finally recovered, I was not able to move anything beyond my waist. I wasn't told that I wouldn't be able to. I was told that I was incomplete, which the word itself-- incomplete. So I worked hard, and I prayed a lot and finally, with the therapy, the outpatient therapy, I was met with Dr. Gail.
NATALIE BARRETT: 18:42	One of the therapists, Buffy, said that I would be a great candidate for the study that was going on with the exoskeleton. And Dr. Gail took me under her wing, and I have been up and about with the exoskeleton. I'm using a walker now. I'm moving around a lot more, and again, it's more than just the walking. When you look at people in a wheelchair, the first thing you say are, "Oh, she can't walk." It's way more than that. I can walk, slowly but surely, but again, the exoskeleton helps with a lot of other issues, bowel, bladder, which was very, very important, the main issue for me. So I'm happy, and I'm going to just keep going.
	[applause]

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STEVE ADUBATO: 19:42 Gail, jump in.

GAIL FORREST: 19:44 Hi, yeah. I mean, they're emotional stories, and if I-- Kelly. I've known Jimmy now for a long time, and I've known Kelly, actually, for a while. I think I saw Kelly just post-implant, and so I'd seen her transition, which has been truly amazing, to where she is today, from the very get-go. And then Natalie, I-- as you can hear, Natalie, I've known-- she's been involved in several of our research studies. I think the stimulation and what she is doing now with her life. So what we're talking about here is an intervention, but what we're really talking about is life change. So it's not something-- we do research, and we have a post, and then we have a three-month follow-up. But this is not what we're talking about. We're talking about life-changing quality events for individuals that are doing this. And at the moment, it's research. As when you get to hear them, it's pretty-- we use the term groundbreaking. I think I've heard it four times. It is groundbreaking for the response and the changes.

STEVE ADUBATO: 21:02 You told us this in the interview I did with you. I've known you long enough to know this, but it's more important you share it with everyone. Why is this so-- why is this research-- why is the work that you do so personal?

GAIL FORREST: 21:18 Me?

STEVE ADUBATO: 21:19 Yeah.

GAIL FORREST: 21:20 Yeah. I mean, I've been doing-- the type of research we do, I have been doing it a long time now. And most of the interventions I do are long-term interventions. I think Natalie's been with us with the stimulation for over 12 months, but most of them are 6 to 8 months long. Because you get to know these individuals. To be a researcher is to be very objective and to really look at the results. But you get to also know individuals, how an injury can affect their lives. And so it is the therapists, the engineers. And I should note that we're part of the team, so it's therapists, engineers, research technicians. All of them get involved with these individuals, and so it becomes personal. They become very friendly, and they are part of what we-- day to day, they come three, four, five times a week. So it becomes very personal.

STEVE ADUBATO: 22:20 Jimmy? Share for folks just a little bit about the injury that you sustained.

JIMMY BROWN: 22:27 Next month will be 15 years. I was down at Jersey Shore, and it was a hot summer day, and my parents had just bought a shore house down in Long Beach Island, and it was right on the water. And on the bay side, the water-- well, the friendly water of New Jersey isn't so clean, and it was a little dark at the bottom, so I didn't know how deep the water was, but it was a hot day. And I threw my bathing suit on and dove off the dock, and the water was two, three feet tops, and I broke my neck. I was laying there face down. I think the people that were watching me thought I was fooling around, but my dad jumped in and flipped me over. Said, "I can't feel anything. Can't move from the neck down." So I guess in that three minutes, four minutes, he saved my life just flipping me over so I could breathe. Swallowed some water, collapsed lung. Was in the hospital for 10 days. Spent just over two months at Kessler, and here I am. 15 years. Been married for eight. Two kids. I've moved on, but these studies are

very inspirational. They lead you with a lot of hope, but in 15 years, it's come a very long way.

STEVE ADUBATO: 23:57 Describe for folks-- and you're going to-- each one of our research participants will actually-- a demonstration's not the right way to say it. They will do whatever they choose to do and can do. But you told me something that really sticks in my mind. I know you're going to try to demonstrate something with a glass of water. But there's something else you told me. You have a son and a daughter?

JIMMY BROWN: 24:25 Yeah.

STEVE ADUBATO: 24:26 How old?

JIMMY BROWN: 24:26 My daughter will be six years old this month, and my son will be three in August. Five and two.

STEVE ADUBATO: 24:35 What did you tell me about-- was it your son or your daughter who threw you a ball?

JIMMY BROWN: 24:44 My son. Doing this study here, I have no hand function at all. I can't move my hands at all. Sometimes you may think I can, but I can't. And when he throws that ball, and you're able to get a little grip on it and throw it back to him, it's-- you can't describe it.

STEVE ADUBATO: 25:12 How much of that, from your perspective, Jimmy, is being a product of being a participant in this research?

JIMMY BROWN: 25:19 A lot. 5% to the average person is nothing, but to me, it's like 150%.

STEVE ADUBATO: 25:31 Wait, 5% improve--

JIMMY BROWN: 25:33 5% improvement of anything, especially hand function. It's life changing. It's tremendous. And not being able to grip that ball to throw it back to him versus having a little bit of a grip to throw it back to him is-- to watch that smile on his face like, "Dad's not different." It's a big deal.

STEVE ADUBATO: 25:58 I know we're here to talk about research, science, innovation, but I met your wife a little bit earlier. The impact that this has had on your ability to be with your family in the way you want to be with your family as best you can given the challenges that you face.

JIMMY BROWN: 26:22 My wife met me 11 years ago, and she never saw me different. But my kids, when there's improvements, I know it. They may not, but to see that smile on his face when I throw that ball back to him, it's-- what could you say? There's no words that could describe that. There's not a price tag you could put on it. It's amazing.

STEVE ADUBATO: 26:52 Can we do this, Jimmy? I know we're talking about throwing a ball right now. I'm going to ask you to do something. By the way, I want to make it clear that I mentioned the Kessler podcast before. And so one of the reasons you're going to hear me narrating some of the things going on is because in a podcast, you can't see what is happening. And so I'm going to ask Jimmy Brown to, in fact, demonstrate-- and tell folks what you're going to be doing, Jimmy, and why it's so significant.

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JIMMY BROWN: 27:20	Right now, I'm going to just try to show you. Hopefully it works out, but. But I could lift this up and pour the water into a cup. I think you saw in that video, which-- I didn't know that was going to be reflected now, but I couldn't pick up a bottle of-- looked like alcohol.
STEVE ADUBATO: 27:39	Could not.
JIMMY BROWN: 27:41	No. I couldn't move it at all.
STEVE ADUBATO: 27:42	And when was that?
GAIL FORREST: 27:45	That was in July of last year. But I should note, that was July of last year that the amount of sessions he's done now is what?
JANELLE: 27:54	12.
JIMMY BROWN: 27:54	12.
GAIL FORREST: 27:55	12 sessions. I mean, the gain is very dramatic. Okay.
STEVE ADUBATO: 28:04	Jimmy?
	[silence]
STEVE ADUBATO: 28:18	Wow.
	[applause]
KELLY THOMAS: 28:23	Yay, Jimmy.
JANELLE: 28:31	Good going. That's awesome.
STEVE ADUBATO: 28:33	Dr. Yue, what do you see when you--?
GUANG YUE: 28:36	It's amazing. So for a person who, at the beginning, could not even move the glass now can raise it and pour the water precisely to another container.
STEVE ADUBATO: 28:54	Very precisely.
GUANG YUE: 28:55	Yeah. That's amazing motor task to accomplish for a person with spinal cord injury.
STEVE ADUBATO: 29:02	Doctor, let me ask you. Beyond what we've heard so far, we clearly have a long way to go. But why are you so hopeful about the future research that is taking place here at the foundation? Yes, please.
GUANG YUE: 29:16	Yeah. So even though we always saw that Jim could do this wonderful motor task, but we still don't know much about how this works, and we still hope that he can do a lot more. So the way to accomplish this is to continue to perform research, and especially to figure out exactly what kind of combination of the stimulation parameters, for example, were to stimulate what kind of a-- what level of intensity to use, at what frequency, and what type of a stimulation pulse to create and to use. And until we figure out all the-- these kind of combinations, the outcome may be much better than what he can do now.

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STEVE ADUBATO: 30:21	Dr. Kirshblum, you want to jump in?
STEVEN KIRSHBLUM: 30:24	Sure. I've been privileged to take care of people with spinal cord injury now for 29 years here at Kessler. And I think that sometimes when we see what's happening here, we're amazed by unbelievable amount of movement. And we sometimes think that for people with spinal cord injury, it's movement alone. And movement is really key. And every little bit of function makes a tremendous difference in terms of independence. But I want to make an important point. If you speak to people that have had spinal cord injury, they'll tell you that there's more than movement that they want.
STEVE ADUBATO: 30:59	Say that again? There's more?
STEVEN KIRSHBLUM: 31:00	There's more than just movement. There's more than just being able to move their arms or move their legs or be able to walk. They want to regain bowel, bladder, sexuality. They want to maintain their blood pressure so that their thoughts aren't so cloudy. These are sometimes what we call the hidden or invisible disabilities for people with spinal cord injury. We see the lack of movement, but it's also some of these other activities. It's the dizziness, the blacking out, the loss of concentration or cognitive function. It's the fatigue. As someone once described it to me, it's feeling like every day you wake up with the flu without the sneezing and coughing, because you just feel so overwhelmed. And what we found is, is that in other studies, right now today, we're concentrating on some of these activities, the movements. But it's also some of these autonomic disturbances that are really being helped as well. And Natalie talked about it before on the bowel and the bladder, and I think that's what makes this so exciting. Because we see so quickly, 12 sessions, the amount of improvement that Jimmy has. But Gail and I have also seen and Dr. Yue, seen some patients who soon after already are starting to feel better, and what we have to do is we need to figure out how this works so that we can not only just use it a little bit but try to perfect it as much as possible.
STEVE ADUBATO: 32:24	And I don't want to turn it into my job to do this, but-- because Rodger will talk to you later. None of that happens. None of that research happens without a significant amount of money, resources, a commitment with dollars and, not to mention, all the other expertise. Gail, you want to jump in? Because I'm going to go to Kelly, who's actually going to help us share as well.
GAIL FORREST: 32:46	Yeah. So I think both Guang and Dr. Kirshblum--
STEVE ADUBATO: 32:49	Do you want to help us at all?
GAIL FORREST: 32:50	--both mentioned really key elements. This isn't just, "Okay, let's put a couple of electrodes on the back of the spine, and let's just zap and [inaudible] and we get it." It isn't. There is real-- the research is to find exactly where to place these electrodes, and it is so early in the piece, that that's where we come in. That's where the research is. That's where our technology and our expertise comes in. We have the clinical arm as well. And as Dr. Kirshblum said, it's all of these other things that individuals with an injury have to deal with daily. Temperature. They are always cold, yet with

	stimulation, that changes. Blood pressure. Full bladder. And at the nuances that you may be able to address those without influencing motor. So now you're thinking about teething out neural networks within the system. That's where we come in to figure that out. That's the science that we're dealing with here, not only the clinical, but the understanding how you get there.
STEVE ADUBATO: 33:51	By the way, I want to make clear-- Janelle, you are a-- you're a professional--
JANELLE: 33:54	Physical therapist.
STEVE ADUBATO: 33:55	--physical therapist. And you've worked with Jimmy?
JANELLE: 33:57	Yes.
STEVE ADUBATO: 33:58	How hard does he work?
JANELLE: 34:00	He gives 110% every time.
STEVE ADUBATO: 34:02	Yeah. By the way, let's give a hand to all the physical therapists who are there every day.
	[applause]
NATALIE BARRETT: 34:08	[inaudible] Erica.
STEVE ADUBATO: 34:11	So Kelly, just help us understand something again. We saw a little bit on video. You're an athlete at the core and a great person who cares deeply about others, which also comes across very quickly. I hate to say, "What are you going to do?" Talk to us about what's about to happen.
KELLY THOMAS: 34:35	Well, first, I was-- I do care a lot about people, but what Jimmy just did-- can we please, again?
	[applause]
KELLY THOMAS: 34:47	That's fantastic. That's amazing. I've never seen anything like that. That's--
JIMMY BROWN: 34:52	Thank you.
KELLY THOMAS: 34:53	That's awesome.
STEVE ADUBATO: 34:54	Is that motivating to you, for you?
KELLY THOMAS: 34:56	Yes, absolutely. I have my hands, and if I didn't, I wouldn't be able to do what I'm about to show you guys, which, you asked, so I'm going to do what I was told that I would never do again, which is walk.
STEVE ADUBATO: 35:09	You'll never do this again.
KELLY THOMAS: 35:11	Well, 1 or 2 percent, which, I mean, if you told most people 1 or 2 percent chance of anything, I mean-- if I told you you have a 1 or 2 percent chance of getting home tonight, would you leave?

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AUDIENCE: 35:22	No.
KELLY THOMAS: 35:23	No? Nobody? I wouldn't either, so. And that's the sad, sad reality is most doctors tell us that we're never going to-- we're never going to walk again. We're never going to stand again. Get used to your wheelchair, because that's your life from now on. And a lot of people just take that reality, and that's not fair. So I'm very, very passionate about everything that's going on tonight with the spinal stimulation, whether it's transcutaneous or epidural, which my implant is epidural, which means it's inside. So it's in my spine. I'm going to turn it on. And I'm going to try to stand up, and I'm going to try to walk. Maybe. Thank you.
	[applause]
KELLY THOMAS: 36:26	Ooh. I've been sitting all day, so bear with me. I kind of basically told my neurosurgeon that I would walk again, and I had the point to prove. I was implanted in September of 2017, and now I walk every day.
	[applause]
KELLY THOMAS: 37:21	Like I said, bear with me. I've been sitting all day.
NATALIE BARRETT: 37:26	Take your time.
AUDIENCE: 37:30	That'll be [inaudible].
	[applause]
KELLY THOMAS: 37:33	I'm--
NATALIE BARRETT: 37:34	Good girl, Kelly.
KELLY THOMAS: 37:35	--a C7-T1. Yes.
NATALIE BARRETT: 37:38	Good girl, Kelly.
KELLY THOMAS: 37:39	Ooh.
STEVE ADUBATO: 37:40	Kelly, is this the furthest you have walked this distance?
KELLY THOMAS: 37:46	Today, yes [laughter]. No. Like I said, I was implanted in September of 2017, and I took my first independent steps in February of 2018. It took months and months of a lot of really hard work.
UNKNOWN: 38:11	Gail? The statement is somewhere, right?
KELLY THOMAS: 38:16	I still get really nervous. People tell me all the time, "It's just walking." So I walk every day now, and it's fantastic to be able to stand up on my feet and look people in the eye.
	[applause]

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STEVE ADUBATO: 38:43	What does that do very you, Kelly, when you're able to look people right in the eye? What does that do for you?
KELLY THOMAS: 38:49	Makes me feel normal. Makes me feel like I'm important again, because I was 19 years old, and I couldn't live like that for the rest of my life. Sorry.
STEVE ADUBATO: 39:06	It's okay.
KELLY THOMAS: 39:08	It's just-- it doesn't just affect me. It affects our whole families.
STEVE ADUBATO: 39:14	Your family have been very supportive?
KELLY THOMAS: 39:16	Very.
STEVE ADUBATO: 39:17	Yeah.
KELLY THOMAS: 39:18	They believe in me when I don't.
STEVE ADUBATO: 39:20	Really?
KELLY THOMAS: 39:21	Yeah.
STEVE ADUBATO: 39:22	Oh. We all believe in you now. Okay.
	[applause]
STEVE ADUBATO: 39:28	Turning around difficult? Not difficult?
AUDIENCE: 39:34	You're beautiful.
KELLY THOMAS: 39:38	Thank you. Yeah. I got a joke for that.
STEVE ADUBATO: 39:43	Go ahead. What would it be, Kelly?
KELLY THOMAS: 39:47	A lot of times when I'm rolling around in my chair, people say, "Oh, you're too pretty to be in that thing." Well, I heard a comedian one time, and he said the same thing. He said someone said to him, "Well, you're too handsome to be in that wheelchair." He said, "So I thought about it for a minute, and I said, 'Well, you're too ugly to be walking [laughter].'" I thought that was pretty funny.
STEVE ADUBATO: 40:21	Kelly, where can we catch your stand-up this weekend?
KELLY THOMAS: 40:26	Well, you can catch my stand-up or sit-down comedy anywhere you'd like [laughter].
STEVE ADUBATO: 40:33	Walked right into that. You want to settle over.
KELLY THOMAS: 40:43	I'll sit down. I won't tell a joke.
STEVE ADUBATO: 40:45	Okay. All yours. Let's hear it one more time for Kelly.
	[applause]
STEVE ADUBATO: 40:56	And Natalie. It was 2015 that you had your spinal cord injury, right?
NATALIE BARRETT: 41:09	Yes.

STEVE ADUBATO: 41:09	Erica will be with you? Where's Erica? Erica, come on over here.
ERICA GARBARINI: 41:12	[inaudible] I think [inaudible]. Yeah.
NATALIE BARRETT: 41:14	Very good. Very good.
STEVE ADUBATO: 41:18	Talk to us.
NATALIE BARRETT: 41:18	Ready to go?
STEVE ADUBATO: 41:19	Yeah, no, we're ready. We're just watching at being, frankly, blown away.
NATALIE BARRETT: 41:27	Well, Kelly was good with the talking and walking at the same time. I won't be [laughter]. I'm just going to do the walking, and let Erica do the talking.
ERICA GARBARINI: 41:36	I'm not talking.
NATALIE BARRETT: 41:37	Oh well.
STEVE ADUBATO: 41:38	Erica, talk to us a little bit.
NATALIE BARRETT: 41:39	A little bit. You got to.
STEVE ADUBATO: 41:40	Talk to us a little bit about the kind of work that Natalie has been doing to get-- to even be in a position to be doing this right now. Describe it.
ERICA GARBARINI: 41:48	Well, early on, she was in a study-- early on, she was in a study where they were applying, possibly, a drug or a placebo, and she was getting locomotor training, and that's how she got introduced into our research. And-- pardon?
STEVE ADUBATO: 42:03	Go ahead.
ERICA GARBARINI: 42:04	And then she, after that study, signed up to be in the exoskeleton study, and then--
STEVE ADUBATO: 42:09	You could always pick up a glass of water.
ERICA GARBARINI: 42:10	--that progressed into walking with the exoskeleton in addition to doing the transcutaneous final stim.
STEVE ADUBATO: 42:16	She has both.
ERICA GARBARINI: 42:18	Both now, yes. So we've been doing the exoskeleton. She's done that for a while, and she pretty much had kind of plateaued. And then we started adding in the stim, and all of the sudden, she just had much better control. And as far as walking outside, she could walk with a walker outside, but she used to put all of her weight down through the walker, and she'd get that leg to come through, and a lot of times, it would scissor

over, and she couldn't get it to uncross again, because the harder she tried, the harder it would go sideways. Right after we started doing the stim with her, it would start to go over, and she was like, "No. Get out there." And then she'd be able to plant it where she wanted it, and then she'd shift her weight onto it. And the next one, it would try to cross over, and she was able to pull it back out again. And as time went on, she started being able to get it out there in the correct place right off. And then we-- she's done with the study now. She recently went back to work full-time.

STEVE ADUBATO: 43:16 Oh, you're working full-time?

NATALIE BARRETT: 43:18 Yeah.

STEVE ADUBATO: 43:19 That by itself.

[applause]

STEVE ADUBATO: 43:22 What kind of work do you do, now?

NATALIE BARRETT: 43:24 I am head of customer service for my pool company that I've been with over 16 years, and I'm now managing our new pool store in Kenilworth, any pool owners.

STEVE ADUBATO: 43:37 So hold on, Natalie, let me get this straight. You've worked so hard to be where you are. Now you've got to hear people complain about their pool?

NATALIE BARRETT: 43:43 Yes, every day [laughter]. Yes.

STEVE ADUBATO: 43:47 What kind of level-- what kind of patience do you have for that? Okay, I'll leave it alone. I'll leave it alone. All yours, Erica.

ERICA GARBARINI: 43:57 So then she completed the study, and we had her in a few more times just to try different things, and actually, she still had the skill. The stim wasn't on anymore, and she still had the skill. And now we haven't walked in-- when was the last time we walked together, Nat? A couple months?

NATALIE BARRETT: 44:19 Months.

STEVE ADUBATO: 44:19 Wow. It's been a couple of months since you walked?

ERICA GARBARINI: 44:21 A couple months. And she hasn't even walked with a cane. She's been walking on her own with the walker, but still using the techniques and everything that we had learned and practiced with the stim. Today we got up with the canes. She still has it. She still has it. She didn't lose it.

STEVE ADUBATO: 44:37 Let's try this.

NATALIE BARRETT: 44:41 Yeah. I wouldn't have told them all that [laughter].

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ERICA GARBARINI: 44:45	So right now, we have the stimulation on her lower neck--
NATALIE BARRETT: 44:49	Pressure, pressure, pressure.
ERICA GARBARINI: 44:50	--and then [inaudible] in her mid-back. Go for it.
	[silence]
	[applause]
STEVE ADUBATO: 45:46	Henry, I heard you mouth the word amazing. What are you thinking?
HENRY STIFEL: 45:51	This is probably one of the most transformative moments for spinal cord injury research. Being the chair for 37 years, it's gone from the graveyard of neural research to realistic expectations and outcomes like these. And this field of research is probably the most promising field of research in neural research to this day.
STEVE ADUBATO: 46:20	Groundbreaking not too strong a word.
HENRY STIFEL: 46:22	Not at all.
	[applause]
STEVE ADUBATO: 46:35	Gail, please. Just talk to us while Natalie's walking.
GAIL FORREST: 46:42	I'll talk to you while Natalie's walking. So I haven't seen Natalie for a while.
STEVE ADUBATO: 46:46	How long?
GAIL FORREST: 46:47	Well, Erica's timeline is accurate. So we tested her. You'll note she's walking with a cane, and so you'd say, "Okay, why make her walk with a cane? Why just make her walk with a walker?" Because one of the things that we know, when we walk with a walker, it shuts down, or it loses-- the way she walked changes, and she actually isn't-- we pushed the envelope. So what Henry said about what we're doing-- everything we're doing is pushing the envelope. So it's harder for her, but her ability to be able to walk with those canes, she could not have done that 12 months ago. And the fact that-- the fact that she is now being out-- she is now functioning. She works from Tuesday through Saturday. I think Natalie told me this morning. Sorry, just before? We haven't seen her for a while, and so she's maintained it. And Jim said to me just before. He said, "I turn it on, and it gets easier. It seems to get easier. Is that supposed to happen like that?" And so this neuromodulation that Dr. Kirshblum is talking about and what Natalie is doing. We're finding all the time we're stretching the envelope to understand this mechanism even more. And yeah, it truly is-- it's groundbreaking because of the mechanisms that we're trying to understand and push the envelope further. Yeah.
STEVE ADUBATO: 48:13	Natalie, I know you said you did not want to do what was done before. But is there anything that you wanted to share with everyone right now as you are walking?

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NATALIE BARRETT: 48:23	Well, it's not easy. But again, I've come so much further than I was, so I'm very happy, and I'm blessed, and I know that if it wasn't for Kessler and the robot and Dr. Gail and Rodger and Erica and Janelle and Isa and all the Johns-- I can't name all of you [laughter]. Abie and everyone else and San and Money and just anyone that I'm forgetting. I love you guys, and I know that I wouldn't be as far as I am without you, so thank you.
	[applause]
NATALIE BARRETT: 49:11	Now I just want to get back to this chair safely.
STEVE ADUBATO: 49:16	If I can ask-- Jimmy, you got any thoughts?
JIMMY BROWN: 49:27	Well, I'm a little embarrassed that I was nervous to pick up a glass [laughter]. And these girls just walked down a runway. Thank God I went first.
STEVE ADUBATO: 49:40	Apparently, this is Staten Island humor.
JIMMY BROWN: 49:44	I didn't plan that. I'm serious. I mean, I was really nervous to pick up a glass. I thought I would drop it, and they just walked down a runway. And it goes to show you that we're all in the same boat, but even something as little as pouring a glass, the impact that it has on my life-- I might not be able to walk down the runway yet, because maybe I'll get in that 2% but--
UNKNOWN: 50:08	Thank you.
JIMMY BROWN: 50:09	--it just goes to show you, I wasn't much of a wow factor, but these girls were wow factors tonight. But it impacts our lives on a percentage that's probably the same. Oh, this was not a wow moment that I poured water in a glass but--
KELLY THOMAS: 50:23	Oh.
NATALIE BARRETT: 50:24	Yes it was a wow moment.
KELLY THOMAS: 50:24	Yes it was.
JIMMY BROWN: 50:26	But this--
STEVE ADUBATO: 50:26	Kelly, do you beg to differ?
KELLY THOMAS: 50:27	I beg-- I didn't want to follow you. I was--
JIMMY BROWN: 50:30	What you guys did was a lot more wow factor, and I didn't know that I would do the wow. But for me, in my life, when we dispersed, and I-- this is a wow moment for me.
STEVE ADUBATO: 50:42	What will it do for you, Jim? I'm sorry for-- what could it do for you?
JIMMY BROWN: 50:46	If it continues on this path, it's endless. I mean, I'm happy just throwing a baseball around with my son in the living room. I mean, who knows? Maybe I could get on the

	field and actually throw a baseball and put a mitt on. I mean, you never know. I mean, it's endless. I mean, it really is.
NATALIE BARRETT: 51:04	Slow and controlled. Bend.
AUDIENCE: 51:09	[inaudible] Natalie.
	[applause]
AUDIENCE: 51:19	You go, girl.
AUDIENCE: 51:22	That's [inaudible].
STEVE ADUBATO: 51:25	Alright , I got nothing. Don't expect a bright or insightful question from me, because I'm just-- I'm at a loss. The three of you and your other colleagues, excuse me, who are researchers experience this in a very different way, I've got to imagine, than those of us who-- I'm one of those PhDs in my family that people say, "Dad, you're not a real doctor. You can't help anybody when you're a PhD in communications." But I've got to imagine that you experience it and see it differently. What do you see?
STEVEN KIRSHBLUM: 52:01	I see amazing things, because as I move through all the people that I've met, and I don't want to just say patients, but the people, the individuals, the family, their friends, and the people that the spinal cord injury impacts. There is now something that we're looking at that has great hope. And this great hope, it's hard to give the percentage for, but every little bit makes a difference. And the thing that I'm thrilled about. It's a wow moment to see everybody get better, but it's-- every day I go to work, it's a wow moment for me as well to think that we here at Kessler are playing a part and want to play a bigger part in making a difference in all of the people's lives that we can.
STEVE ADUBATO: 52:56	Now, we're going to be hearing from-- well said.
	[applause]
STEVE ADUBATO: 53:01	Excuse me, Natalie. We're going to hear from Rodger in just a bit, but Allison, was there a microphone somewhere? Is there a microphone? Could you bring it over here? Since Phil Donahue's not working anymore, I will run around this audience. So questions, comments, reaction? Listen, I'm told that this is one of the largest crowds we've ever had at the Foundation. By the way, why do you think that is?
RODGER DEROSE: 53:25	I think that what we've seen here tonight, I believe, Steve, is so demonstrable. You've hosted the work-- the great work that we've done in stroke rehabilitation and MS and robotics, and tonight, while all of those move the needle in terms of care that it has remarkable interventions, tonight we hear from individuals that have said they would never walk again. Or Jimmy, who demonstrated that he could pick up a glass and so--
STEVE ADUBATO: 53:58	And throw a ball and catch it.
RODGER DEROSE: 54:00	And throw a ball, exactly. So I think it's a demonstration of what the future holds. And it's just the tip of the iceberg, Steve.

STEVE ADUBATO: 54:09	Hands up. Somebody's got a question, a reaction. Yes, young lady right here. Hey, how you doing neighbor?
AUDIENCE: 54:13	That's what I told them.
STEVE ADUBATO: 54:15	Talk to us.
AUDIENCE: 54:16	My question is, so we're hearing doctors saying, "Well, only 1%, 2% will ever walk again or will ever have any movement or whatever. So with this type of research as it goes on, are those percentages, I mean, going to go change? I mean, is it now going to be, with a spinal cord injury, 20%? Oh, you may be one of the-- 1 in 10 or 2 in 10 that will be able to walk. And where are we really looking for this to go?
STEVE ADUBATO: 54:52	So as we make more progress, do the numbers change? Gail? Why you looking at your colleague? By the way, what do you think, Gail? Do you think the numbers will change? I hate to say the odds. That's a terrible way of looking at it, but you were told 1 to 2 percent. That was said to you.
KELLY THOMAS: 55:08	Well, neurosurgeons are taught to just do neurosurgery. They're not taught the rehab world. They don't know what goes on outside of an operating room, so for me, the odds-- I mean, those surgeons, they're not really into this, the robotics, and-- I mean, when I told my surgeon what I was doing, he was like, "Huh? Where? What?" He had no idea.
STEVE ADUBATO: 55:33	Gail, you think the odds will change?
GAIL FORREST: 55:37	So I'm going to be highly conservative and say we don't really know what the future is. But I have to say, for the individuals that have been implanted, and these have been reported, voluntary function-- and that's what we're talking about, here. We're not talking about the stimulation causing the function. We're talking about the individuals now can voluntary start to do. For example, with Jimmy, they've toned down the stimulation parameters, because he had-- because it was interfering. Similar with the epidural. You tone down the stimulation parameters, because it's interfering. So what you're doing-- mechanistically, we're sort of-- that's where the research comes in. But we're increasing voluntary function. So of the people that have been implanted that are published, they've gained voluntary function. Dr. Susan Harkema. They've gained voluntary function. So that that success rate is pretty significant. However, please note, it's with the stimulator on, not with the stimulator off at this point. So there's a lot of research. But again, you heard Natalie say that she has actually maintained it. So it's very early. We don't understand that, and that is where the research comes in.
STEVE ADUBATO: 57:04	Another question? I saw some hands up. Yes?
CAROL: 57:09	My name is Carol [inaudible].
STEVE ADUBATO: 57:10	Carol, go ahead. Why don't you take that microphone?
CAROL: 57:13	Okay. I'd like to add to that in the sense that, yes. I actually entered myself-- I didn't enter myself. I was in a motor vehicle accident. Ready to almost retire, and as-- you

	just never know. My life as a retired person was not expected to be sitting in a wheelchair. However, I ended up at Kessler with a incomplete injury, and one of the first days I was there-- I had a very extremely supportive family. I was one of the lucky ones. Some people don't have that. My son walks in with a big calendar, and he says to me, "Okay. Every day when you go into therapy, I want you-- or the end of the day, I want you to write something on the calendar for today that inspired you or made you want to go for it." And one of the first days in there and the first day with my calendar, I encountered meeting Natalie. And Natalie, being a go-getter--
STEVE ADUBATO: 58:23	That Natalie up there?
CAROL: 58:24	That Natalie up there. And that--
STEVE ADUBATO: 58:26	From East Orange?
CAROL: 58:27	That Natalie up there, her inspiration to move on-- and that's what I think-- people being able to move on and seeing others making achievements, it's work. You saw her. Natalie just didn't pop out of that chair and run down the runway. But she's still working at it as we all want to. But if they don't see that there's progress, and there's no hope, people can give up hope a lot easier than they can move forward and achieve it. So my first day on the calendar, my word was Natalie. That's the honest to God's truth.
STEVE ADUBATO: 59:16	Carol, before I let you give up that microphone, how inspired are you tonight? Because you--
CAROL: 59:20	Extremely. I'm so happy to have been invited here. Because every time-- those of us that are in the chair can all relate that we all-- regardless, we can't change our emotions. And every once and a while, we definitely are down. And we try to bounce back and pull ourselves forward, and by coming and seeing other people that are making progress or working at it and people that are so dedicated. I wish I could win the lottery and turn the money over so that we could give it to research, but--
STEVE ADUBATO: 01:00:00	You mean at Kessler Foundation?
CAROL: 01:00:02	At Kessler Foundation. Of course.
STEVE ADUBATO: 01:00:03	Just making sure. Not anywhere else.
CAROL: 01:00:05	At Kessler.
STEVE ADUBATO: 01:00:06	Okay.
CAROL: 01:00:06	But you know what? Nobody knows what you go through till you're in the shoes. And I can understand the three representatives up there. I'm sure they can relate to me. It's good to have peer involvement. And like I said, there's nothing more than seeing others making progress that makes you want to strive.

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STEVE ADUBATO: 01:00:31	We wish you all the best. Thank you.
CAROL: 01:00:32	Thank you. [applause].
STEVE ADUBATO: 01:00:35	Well said. Yes sir?
RONNIE: 01:00:41	Hi. I'm Ronnie Slevin. I've been to these programs before. Tonight was beyond amazing, and I think it was in the movie Forrest Gump where either Gary Sinise or Tom Hanks said, "We're going to need a bigger boat." Well, you keep putting programs on like this, you're going to need a bigger room.
STEVE ADUBATO: 01:01:01	What inspires you the most tonight?
RONNIE: 01:01:04	Strength. Strength. And perseverance.
NATALIE BARRETT: 01:01:09	Yeah. Amen.
STEVE ADUBATO: 01:01:09	The research is incredible, isn't it?
RONNIE: 01:01:12	Beyond.
STEVE ADUBATO: 01:01:14	Thank you very much. Anyone else? Anyone else want to give testimony? Yes.
JEFF: 01:01:20	Hi. My wife was at Kessler twice in the last two and a half years. And not to take any of the thunder away from the moderators or the people that have suffered these terrible injuries, but Kessler is an amazing foundation, an amazing building in West Orange, where the staff worries about each individual. My wife came back perfectly. She suffered a very odd illness called Guillain-Barre syndrome, which the neurologists still can't totally focus on. But I'm so proud to see the support that this community has striven to support this wonderful, wonderful Kessler group.
STEVE ADUBATO: 01:02:16	What's your wife's name?
JEFF: 01:02:17	Amy.
STEVE ADUBATO: 01:02:18	Amy. Now, Amy, can I just do this? What's your first name again?
JEFF: 01:02:21	Jeff.
STEVE ADUBATO: 01:02:21	Amy, could you take the microphone? Amy, Jeff has just said that you came back perfect. Hold on. I just want to clarify. Your husband perfect?

AMY: 01:02:36	Yeah.
STEVE ADUBATO: 01:02:37	He is?
AMY: 01:02:37	Yes, yes. He is.
STEVE ADUBATO: 01:02:38	Absolutely perfect?
AMY: 01:02:39	Perfect.
STEVE ADUBATO: 01:02:39	Just want to clarify that, because I want to ask my wife when I get home tonight. I'm sure I'm not going to get the same answer. You know, we've heard a lot tonight. Final comments before Rodger comes up and closes the evening? Any one of you want to say anything? Kelly? Final thoughts?
KELLY THOMAS: 01:02:55	Thank you all for being here and supporting us, regardless.
STEVE ADUBATO: 01:02:58	Natalie?
NATALIE BARRETT: 01:02:59	Donate more money, please [laughter].
STEVE ADUBATO: 01:03:05	You're not going to say, "Show me the money," are you?
NATALIE BARRETT: 01:03:08	Show us the money.
STEVE ADUBATO: 01:03:10	Jimmy.
JIMMY BROWN: 01:03:12	Thank you for coming out. Seeing the looks on everybody's faces from what we have done, it's inspirational. It makes you want to get back in the gym in the morning and do more.
NATALIE BARRETT: 01:03:21	Absolutely, yeah. Yeah.
STEVE ADUBATO: 01:03:23	Absolutely. Let's hear it for our three research participants.
	[applause]
STEVE ADUBATO: 01:03:27	Such a powerful, important message. Not just in what they said, but what they did. Doctors, you want to share anything before we wrap up?
STEVEN KIRSHBLUM: 01:03:36	So there was one question that was really fantastic, which is about prognosis. And I want to tell you a very quick story. A number of years ago, a family of a 15-year-old said, "I want to know the prognosis for my son to be able to walk again." And I don't

like to give numbers. The chances were very low. And she was very upset, the mom. She came back the next day with a series of articles saying, "Why can't you tell me? Look at all these articles that are published. It gives numbers. Why can't you explain them to me?" And then she said, "Wait a second. You wrote all those articles [laughter]." The point I want to make is, is that the percentages of spontaneous recovery from neurologic injury is no different today than it was 10 years ago or 15 years ago or 30 years ago. But the interventions we are now finding will change that needle, and that is really the key.

STEVE ADUBATO: 01:04:39 Dr. Guang, comment?

GUANG YUE: 01:04:41 Yeah. Also, I-- yeah. I would like to echo Dr. Kirshblum's comment. So percentage actually represent the past statistics based on the particular condition of the patient. If our research is successful, we can significantly improve the percentage. The research, what we tried to do is to pick out how the treatment can repair or help regrow the injured tissues of fibers into spinal cord. Once we find the best way to do that and the percent will improve dramatically. So the key is to continue the research, and we need the support to move the research forward.

STEVE ADUBATO: 01:05:49 Dr. Forrest?

GAIL FORREST: 01:05:50 Yeah, so both Dr. Kirshblum and Guang make really, really, really good points. And I think-- what we've been doing-- this part of what we've been doing, we've been doing a very short time. And certainly Dr. Kirshblum and I have been involved with stimulation, spinal stimulation for a while. And so where it's going is determined by how much work we put into it and how much effort we put into it. And for that occur, we have to understand it more. And at the moment, the stimulators aren't-- they can be improved. The technology can be improved. The way we're analyzing this, what we're doing. All of this may be improved. The man hours to do that takes a lot of man hours and the computational element of this. So all of this drives the future of what we're doing. So without doubt, we have a lot of work to do. But all of that requires a lot of work. It's really hard.

STEVE ADUBATO: 01:06:50 Let's have all-- let's hear it for our researchers [inaudible].

[applause]

STEVE ADUBATO: 01:06:58 Before I bring Rodger up, let me just repeat something I said before, which is even more clear to me now after this conversation. When you moderate a fair number of forums, panel discussions, conferences, whatever, you do the best you can to engage people. You do the best you can to help create an environment for the most stimulating, important, relevant conversation. I didn't have to do that tonight. The people who are here tonight, the participants, the researchers, people who spoke from the heart about things that matter most to them and to the people in this room, made make job very easy. And to all of you, I thank you for being part of a very special

night. So please join me in welcoming the President and Chief Executive Officer of Kessler Foundation, Rodger DeRose.

NATALIE BARRETT: 01:07:52

Yay, Rodger.

[applause]

RODGER DEROSE: 01:07:56

Hi. Thank you. Thank you, Steve. Thank you for bringing out a great conversation again, as you always do, and we're looking forward to seeing the TV interviews that you did later this summer and into the fall. So thank you very much. And Natalie, Kelly, and Jim, thank you for being here tonight and demonstrating such groundbreaking work, a word that's been used over and over tonight. And Dr. Yue and Kirshblum and Dr. Forrest, thank you for your leadership tonight as well. Ladies and gentlemen, I'm not going to take up a lot of your time, because I know it's warm in here. But I do want to kind of summarize what I think we heard tonight. And let me start by saying we are so lucky to have the hard and smart working scientists that we have on our staff here at Kessler Foundation. And you only saw a portion of it tonight, individuals that are working on this specific area. We also have scientists that are working in brain injury and stroke rehabilitation research, multiple sclerosis, or working in other neuromuscular conditions. And we're also working in employment research, which addresses the very stubborn issue of people with disabilities going back into the workforce. And we are even a grant maker in that area as well. We are also so fortunate to have a board of trustees that believe in us as a management committee when we came to them in March of 2018 and asked them to support this major initiative, to build a new building, to install it with the latest technology, to hire additional staff. And without that, we would not be here tonight.

RODGER DEROSE: 01:09:38

That is going to be the second major center for spinal stimulation in the country that is really dedicated to this initiative. And that would be on the hospital campus in West Orange, at the Kessler Hospital. And the zip code there is 07052, and I mention that because patients from around the country are going to want to participate in this research. So I have to tell you that I think what we saw here tonight is disruptive technology. It's an intervention that is going to be the standard of care in the future for spinal cord injury patients. And we live with disruptive technology every day in our lives. You just think about what Apple's iPod did with how we carry music today. The smartphone and the computing power that it has from-- more so from the computers, the desktops that we had in the '90s. What Airbnb has done to the hotel industry, putting a dent in the hotel industry, and making world travel much easier and more affordable. What Google Maps and what Waze have done. None of you carry maps anymore in your car, I would imagine. What happened with Netflix when they came out with the very boring concept of mailing DVDs and then started streaming movies and put Blockbuster out of business. And the one that for me that takes the cake in terms of disruptive technology is Amazon, in terms of what they have done to disrupt the retail industry and put companies like Sears and J.C. Penney and Kmart into a death spiral.

Kessler Foundation Podcast Transcript: Transforming Care and Recovery for People with Spinal Cord Injury

RODGER DEROSE: 01:11:20

And some of you may not know this, but Jeff Bezos when he was thinking of naming his company, he was going to call it Cadabra, as in abracadabra. But too many people mispronounced Cadabra for cadaver, and so luckily, he changed it. You can imagine going to a party and saying that you own 10 shares of cadaver stock, right? And by the way, for any of you that might know, MacKenzie Bezos, who just filed and won a $36 billion lawsuit from Jeff Bezos. She's going to give half of that away to charity. And if you do know her [laughter], if you could introduce her to us, we would greatly appreciate it. So I think tonight what we saw is we saw our scientists demonstrate through the participants here tonight that through brain intention that below the level of injury in the spinal cord column, that we can find a pathway that makes a reconnection. And that is, I think, where the groundbreaking aspect of this intervention takes place. Now we were one of the early investors or funders, if you will, in the epidural stimulation project along with the Christopher & Dana Reeve Foundation, who have gotten much of this work off the ground at Louisville. And so we have been working so closely with the University of Louisville over the last 10 years. And you know, everything has to start somewhere. The animal models for this research started decades ago. In humans, it started about a decade ago. And so we're at the early cusp.

RODGER DEROSE: 01:13:06

And so, one of the questions that we have to ask ourselves tonight is what happens when there's a convergence of technology and medical applications that give us an even more elegant solution than what we saw here tonight? What happens when regenerative medicine and spinal and stem cells actually start to reduce the scar tissue after surgery for a spinal cord injured patient? Does it actually improve the pathway and the connectors between brain intention and with the stimulator on, making that connection? What happens through exponential learning in quantum computing and artificial intelligence in terms of our learning ability to really accelerate our learning understanding of this intervention that we're talking about here tonight? And I would ask you just to think about the human genome project, which started in 1990. And by 1997, it was only 1% complete. And yet after that, every year thereafter, they were doubling their knowledge. So it went from 1 to 2 percent, 2 to 4, 4 to 8, 8 to 16 to 32 to 64. And by 2003, they had completed the human genome project. And that's what we're talking about here tonight. We're in the early stages. But this is what can happen with all of those things that I just talked about in an exponential learning environment. So if you were taken-- if you were impressed by Natalie, Kelly, and Jimmy in terms of the work that they demonstrated to you tonight and their abilities tonight, I would ask you, along with MacKenzie Bezos, to consider a gift to the Kessler Foundation.

RODGER DEROSE: 01:14:54

And the reason I tell you that is this. Is that for every dollar that you give to Kessler Foundation, the scientists on the stage have this ability to multiply that. Because what happens is, they take your investment, and they collect pilot data so that they can then apply for grant activity with the New Jersey Commission on Spinal Cord Injury, with the NIH, with the Department of Defense. And they have a multiplying factor of 15 for every dollar that you give. 20 for every dollar that you give. 25 for every dollar that you give. It's really remarkable in terms of the success rate. Under the leadership

of Dr. John DeLuca, our researchers went 35% of the grants that they submit. Compare that to the leading universities across the country which is in the 10 to 12 percent range. So I would just kindly ask you to give consideration to that, and if you are impressed with the work that we're doing, remember the zip code that I told you about, 07052, because that will be the location, right in your own backyard. That is going to be a world leader in this area of epidural and transcutaneous stimulation that may lead to other great things. And it won't stop in just spinal cord injury, because you've heard the millions of people that have paralysis in the country, just here in the United States. And this application has the potential for stroke, for other mobility related issues like TBI, multiple sclerosis, and others as well. So please give consideration, and again, we thank you for coming out and spending your Monday evening with us. Thank you so much.

[applause]

ANNOUNCER: 01:16:43 For more information about Kessler Foundation and our researchers, go to kesslerfoundation.org. That's K-E-S-S-L-E-R-F-O-U-N-D-A-T-I-O-N, dot org. Like us on Facebook; follow us on Instagram; listen to us on SoundCloud; and tweet with us on Twitter.