Marie: Hello, and welcome to the Parkinson's Research Podcast: New Discoveries in Neuroscience. I'm your host, Dr. Marie McNeely, and I've partnered with The Michael J. Fox Foundation for Parkinson's Research to bring you to the forefront of the field of neuroscience to discuss the latest advances and discoveries with leading experts.

The Michael J. Fox Foundation created this podcast for researchers, clinicians, and industry professionals with the hope that these conversations, and the resources we share will advance your efforts and partnerships to improve brain health. We are welcoming guests with a range of experiences and viewpoints. The views expressed belong to the guests themselves.

Today, we are excited to welcome our guest, Dr. Karoly Nikolich. Listeners, Karoly is a Scientific Advisor at Bayshore Global Management and at Pivotal Bioventures. He's Chairman and Executive advisor at Alkahest Inc., and also an Adjunct Professor of Psychiatry at Stanford University. Karoly is a serial entrepreneur with extensive expertise in the biotech and neuro-therapeutics industries, and he also manages his foundation, the Schaller-Nikolich Foundation. Today, we are excited to hear his perspectives on the industry side of the state of the field of neuroscience, as well as areas of opportunity and the role of industry in advancing the field. So, Karoly, welcome to the show today. How are you?

Karoly: Very well. Thank you. It's my pleasure to be on the program.

Marie: Well, we are excited to have you with us today. Let's start with the basics, perhaps. Can you first tell us a little bit more about your background and how you found your way to all of these current positions I mentioned?

Karoly: Well, I am a native of Hungary. I grew up there. I trained as a neuroscientist and then did postdoctoral work here in the U.S. I was fortunate enough to work with a professor in New Orleans at Tulane University, who during that time, received a Nobel Prize. Afterwards, I worked at UCSF as a postdoc and worked in the hub of biotechnology. This was in the early '80s when biotechnology was born. And 40 years ago, I joined Genentech. And Genentech was the creator of biotechnology, as you know. And the exciting entrepreneurial spirit of Genentech really infected me, so to speak.

And I became good friends with Bob Swanson, who was the founder of Genentech. And after I left, I actually spent two years with him building a startup company and learned the basics of entrepreneurship from him. So, this was my launch into starting companies. And since then, I started about seven companies. And so I became a serial entrepreneur. But at the same time, I also maintained an academic interest, and I'm an adjunct professor at Stanford University.

Marie: Absolutely. And I love that you bring all of these different perspectives to the work that you do. So, we'd love to hear a little bit more about your perspective. Karoly, what do you see as some of the most important unanswered questions in Parkinson's neuroscience today?

Karoly: That's a wonderful question. At the same time, a huge challenge. As with any degenerative disease, the biggest challenge is that we do not understand the pre-symptomatic, the pre-diagnostic processes that lead to the disease. Our current view is that there are molecular mechanisms lurking in the brain, in the body, that slowly kill motor neurons in the brain, that then after a certain period, they suddenly manifest as Parkinson's disease. If there was a way of delineating the pre-symptomatic, pre-diagnostic conditions, that would be a huge leap. And the other big challenge is that we still don't understand the disease mechanisms that actually then propagate the disease condition, although there is a lot of progress in that space.

Marie: Absolutely. I think some of these basic science questions that you touched on just then are a huge gap in the knowledge here for trying to address Parkinson's disease. So, how is industry contributing to filling some of these critical gaps in our scientific knowledge, as well as clinical practice?

Karoly: So, there is a lot of progress in developing new compounds, developing assays, developing models of the disease. And I would say that perhaps one of the most fascinating developments is public-private partnerships in this area.

And I have been working with The Michael J. Fox Foundation for years now. And the effort that they have been doing has laid the foundations of some real breakthrough understanding of disease mechanisms. And partnering with The Michael J. Fox Foundation, several companies are developing small molecules and antibodies against a particular mechanism, which is the aggregation of alpha-synuclein, one of the culprits. Also, other companies are developing inhibitors of another culprit, an enzyme, a kinase, LRRK2. And also there is a serious effort and promising effort in developing gene therapies, as well as more sensitive diagnostics and detection tools.

So, there is a lot of promise on the horizon. And I think after a long slump, as you know, dopamine-based drugs or L-DOPA-based drugs were developed 30, 40 years ago, and those have been perfected by now. They are dosed properly. They are combined with other agents. But that unfortunately led to a bit of a slowdown in the understanding of other disease mechanisms. As of today, we still do not have a disease-modifying agent. So, we have symptomatic agents, but not disease-modifying agents. And this is the biggest challenge. And I think

this is the front line now of industry efforts, as well as the Foundation-supported efforts.

Marie: Certainly. And I think it's exciting to see that the field is, as a whole, moving forward on multiple different fronts here. And I think, for organizations that may want to get involved in these, you mentioned these public-private partnerships. Some people may not know even where to begin. So how did you start on this path, or how do you perhaps see that you can encourage these kinds of partnerships happening in the future?

Karoly: So, Parkinson's disease is a very unique area. There is a wonderful philanthropist, Sergey Brin, who co-founded Google. And he has had a personal interest in Parkinson's disease. This has been publicized. And he has committed so far well over a billion dollars to Parkinson's research through two vehicles. One of them is The Michael J. Fox Foundation. And the other one is more recently created, the organization called ASAP, which stands for Aligning Science Across Parkinson's. And both of these, in well-aligned synchrony, are truly changing the research, they are driving these public-private partnerships, and I really think that this has changed the research and development efforts in Parkinson's disease. This is a very unique effort.

Marie: Absolutely. And in terms of some of the breakthroughs, I guess if you had to point to maybe some specific breakthroughs, Karoly, what are some of the major breakthroughs in Parkinson's research that you feel like industry has really had a hand in helping to drive?

Karoly: So, one of the most exciting developments, which Michael J. Fox himself has publicized earlier this year, is the recognition that one of the culprits, alpha-synuclein, precipitates and propagates the accumulation of insoluble proteins in neurons. And they developed a particular assay which now is a basis and a workhorse for developing new drugs.

Also, new chemistry has been developed. That new chemistry which allows drugs to enter the brain and enter neurons is extremely important, very valuable. And several companies are working on that. And I also should note that gene therapy has made a lot of great progress in the past decade and there are now very good gene therapy vectors. I'm sure that you have seen companies pioneering gene therapy.

They are delivering genes into the brain, into neurons that will protect them from the detrimental effects of defective genes. And so this is also a very promising area. And for many of the, now currently recognized culprits, there are serious gene therapy efforts going on. So, it's a multi-pronged effort.

Marie: Certainly, I think Karoly, as you alluded to, this is a particularly exciting time in the field of Parkinson's research. And of course, we mentioned you work with multiple different companies. So, is there a particular, maybe recent, development or a discovery that you've seen come out of one of these companies that you work with that you are particularly excited about at the moment?

Karoly: Yes, there is a company in Europe, UCB, a Belgian company, which partnered with Novartis, and they are developing a synuclein aggregation inhibitor, which has reached now phase II studies. Then, Hoffmann-La Roche has partnered with a company here in the San Francisco Bay Area called Prothena. They're developing an antibody that addresses exactly the same mechanism, the accumulation and degradation of alpha-synuclein. There is another company, Denali, which partnered with Biogen, and they are developing an inhibitor against LRRK2, the kinase enzyme I mentioned previously.

And there are a couple of companies, several companies that are developing gene therapies, putting in some of the protective genes, PRKN, and correcting, basically, the mutated defective genes. So, there is a lot of good effort going on here. And supporting all of this effort, again, there is a fantastic background that is supported by both The Michael J. Fox Foundation and ASAP. So, I would highlight among those, there is an effort called GP2. This is the Global Parkinson's Genetics Program. And they have just recently had a real fascinating breakthrough. They identified an entirely new mutation in an African population in Nigeria, in the GBA1 gene, which had not been seen previously in other ethnicities.

The Michael J. Fox Foundation initiated a program called PPMI, which is the Parkinson's Progression Marker Initiative. And they have now somewhere around 3,000 patients who were diagnosed very early on. And they have been followed for, some of them by now, 10 years. So, this is an incredible collection that is emerging and generating new insights into the disease mechanisms. There is a big effort in England called the UK Biobank. They also have over 50,000 people participating, and many of them have Parkinson's disease. And recently, we identified a biospecimen collection, which is a huge, very unique collection. The Plasma Company Grifols in Barcelona has collected samples going back 14 years from their plasma donors.

And they have over 100 million biospecimens from them. By now, about more than 7,000 people developed Parkinson's disease. So, this will also give us a very unique angle/insight into the pre-symptomatic phase of the disease, because these people donated plasma during the time when they didn't have the disease. So there are lots of parallel efforts coming along. And it's just as you noted, this is a very exciting time for Parkinson's disease.

Marie: Certainly, and Karoly, you just scratched the surface of some of these remarkable advances that have been made and are continuing to move the field forward, whether it's the alpha-synuclein aggregation inhibitors, or other therapeutics, these gene therapy approaches, or just other advances that are in the works at the moment. So, how will these advances then move the field forward? And maybe what do you see in the future for the field?

Karoly: One of the most exciting things that I witness is the collaborative spirit that has emerged as a result of the Bayshore-Funded efforts, The Michael J. Fox Foundation's initiatives and now the ASAP initiatives.

This has really catalyzed the entire field. Michael J. Fox organizes dozens of conferences during the year. ASAP is organizing larger meetings where they gather all of their sponsored investigators who exchange ideas among themselves, but with the participation of industry. We had, a couple months ago, we had a major meeting with 250 participants in Carlsbad down in Southern California, which was a fantastic workshop, an exchange of ideas.

And they are hosting another meeting in London for also a similar number of participants where the sponsored teams will present. And what I see is, you know, this collaboration, this spirit of openness and one of the Bayshore criteria is that among The Michael J. Fox Foundation and ASAP-funded academic teams as well as industry teams, there has to be full transparency, sharing of data. And this is really, truly catalyzing the field. So, I think the cross fertilization of ideas, the exchange of biological assays, of targets, of mechanisms, that is a huge aid for the whole field. And so that is a major force that has emerged during the past couple of years.

Marie: Absolutely, I think tremendous progress has been made. But I think science doesn't always go as you expect it. So, Karoly, have there been surprises along the way for you? And if so, what have been some of the biggest surprises or perhaps unexpected outcomes that you've encountered in your work?

Karoly: That's a fascinating and challenging question, because there have been many. I think one of the results that emerged from the PPMI effort was that there are multiple subtypes of Parkinson's disease. And maybe it's not so surprising, but they actually started characterizing the patients by phenotype. So, by you know, some people have very characteristic Parkinsonian tremor, some people freeze, some people have cognitive decline, some people don't have cognitive decline.

And so there are many phenotypic features that the PPMI effort has characterized. And this indeed allowed us to have a deeper insight into multiple subtypes of Parkinson's disease. And the other surprise, which, again, may not

be such a huge surprise, but there are common mechanisms underlying different types of neurodegenerative diseases. And in fact, this year, I think it was in July, the Alzheimer's Association held a conference in Amsterdam. And there they announced the new criteria for Alzheimer's disease. And quite remarkably, one of the criteria is the accumulation of alpha-synuclein in Alzheimer's disease. So, that culprit alpha-synuclein, once it aggregates, is also involved in Alzheimer's type neurodegeneration. And I'm sure that there will be others that will emerge.

And then other diseases like multiple system atrophy, and Lewy body dementia also have very interesting and, and, you know, promising. From the point of developing new therapies, they also share many commonalities with Parkinson's mechanisms. So, I think these have been surprises, somewhat unexpected. But when you look back, then you say, well, you know, it makes sense.

Marie: Absolutely. I think there is a lot of value in further exploring some of these links between different neurological and neurodegenerative diseases. And, you know, we touched on just some of these unexpected outcomes. And I think there's also just a lot of untapped areas of research that still need to be explored in this area. So from your perspective in industry, Karoly, what are some of these key areas of opportunity or maybe areas that just haven't been explored yet in terms of Parkinson's research and maybe therapeutic development as well?

Karoly: There is a lot of really exciting developments. So, I mentioned two different types, because on the one hand, you know, we would like to make the lives of Parkinson's patients better, more effective, more functional. So, I mentioned a couple of them. You probably are familiar with the deep brain stimulation technique, which basically is implanting electrodes into the brain into the damaged area, and providing electrical stimulation, which gets them back towards a normal functioning. And there have been really impressive developments. For example, the Apple Watch and similar watches have been explored with success to the patients, to provide them feedback when they need to take their medication. So, the watch with the built-in accelerometer allows them to see when their tremor is beginning to get more intense or all kinds of, you know, there is a whole host of physiological measurements that can be recorded by the watches. And these watches then provide a signal back to the patient when to take the medication. And this is a much better way of taking medication than simply based on timing. You know, the current regimen is to take the medication every two, three, four hours.

And that varies depending on the activities of the patient, depending on the mental, physical, eating, you know, metabolic status. So this kind of feedback mechanism from a watch or some sort of detector is very, very important. And I recently, we also evaluated and I believe that Bayshore also made an investment in this company that's developed an electrical stimulator, which patients can use

to stimulate their swallowing. Parkinson's patients, as the disease progresses, have a hard time swallowing.

And, as you can imagine, that's a huge problem when you have to take pills, and these pills are often not the smallest. So, that is a wonderful thing, you know, it's a little electrical, handheld, tiny device which you just place to the neck, and it provides an electrical stimulus which stimulates swallowing. So, I mentioned these devices and supporting approaches for patients to have a more functional life. On the other side, I think clearly there is a lot of developments in terms of therapeutics, and again, I would just refer to all of that collaboration that's going on in understanding the molecular mechanisms, understanding and delineating the pre-symptomatic mechanisms, developing new biomarkers. As you can imagine, if it was possible to monitor, to discover that somebody has Parkinson's disease 10 years before the manifest disease, then that would allow a much more effective way of treating the disease, rather than only stepping in once the disease is manifest.

Marie: Absolutely. I think that completely changes the model of care for Parkinson's disease, being able to have that early detection, even before symptoms are manifesting. I think that would be remarkable. And we touched on this previously, just this pervasive, I think spirit of collaboration you called it, which I think is a lovely way to put it. But this idea of having increased transparency, data sharing, cross-pollination of ideas. And I think that is really helping move the field forward. So, how can industry partners really benefit from some of these open science efforts, whether it's the initiatives from MJFF or others?

Karoly: It's really one of the most important developments, I would say, in the last decade, even the last couple of years, that the single donor behind the efforts here, who is a knowledgeable, very interested, very dedicated, generous donor, has really catalyzed the field. And you know, the two efforts, The Michael J. Fox Foundation has an incredible infrastructure and ASAP has been developing very rapidly. And they have created a collaborative network. They actually call it the Collaborative Research Network (CRN). And they are fostering collaboration, on the one hand, among academics. They are giving out significant grant funding to academic groups, but one of the criteria is collaboration. And at the same time, they are also fostering collaboration with industry.

And that partnership, that exchange of ideas, that facilitation is very, very significant. A couple of weeks ago, I participated on a call, which was a presentation from AbbVie, the large pharmaceutical company. And I was very pleasantly impressed that AbbVie took the samples, the, I think it was a previous kind of collection, somewhere around 1,500 patient samples over time. So, it was actually a very interesting and very impressive sequence of molecular events. And they funded the analysis of as complete a proteomic analysis as possible.

So, there are two big platforms currently to analyze the proteins in circulation and also in the cerebrospinal fluid. One of them is a company called SomaLogic in Colorado. The other one is OLink, a Swedish company with a U.S. presence. And the two of them offered array analysis. One of them, Somalogic currently offers a 10,000 protein array and OLink is a 5,300 protein array.

And collectively, these allow now and previously unprecedented depths of analysis of circulating proteins as well as proteins in the cerebrospinal fluid. And I was very impressed that this partnership between AbbVie and The Michael J. Fox Foundation, and there was a German investigator also who participated in the study through The Michael J. Fox Foundation, presented their data, and it was an open sharing of data. And they shared the slides afterwards, and it was a very, very impressive progress in this direction. So, there is a lot of fascinating developments in this.

And yesterday, actually, I visited a company here that uses ultra-sensitive, ultra-high-[resolution] microscopy to monitor protein dynamics inside cells. They now are offering this platform to collaborate with Parkinson's researchers. And I think that will also be an incredibly interesting development because currently most of the proteins that we have identified and that emerged from the genetics program as well as the proteomics program, are intracellular. Many of the mechanisms that have been identified are mitochondrial, or somehow cytosolic, or related to the various organelles inside neurons and glial cells. And those will benefit hugely from monitoring, analyzing the intracellular dynamics of these proteins. So I think, you know, there are so many things that have been catalyzed by The Michael J. Fox Foundation, as well as ASAP, that it's almost dizzying to follow. But it's incredibly exciting.

Marie: Absolutely. I think it is really encouraging to see all of these different people and companies who are eager to share their work and some of the resources that they're developing. I guess thinking about the flip side on the receiving end, Karoly, do you have an example that you've seen where someone has actually taken some of these amazing resources that are out there now and really use them to their benefit or to move the field forward?

Karoly: Yes. Several companies are already subscribing to the databases that have been built by Michael J. Fox and by ASAP. And these databases are beginning to offer much, much deeper insights. So, as you can imagine, the proteomic, genomic, metabolomic, epigenetic changes in neurons, as well as glial cells, are very, very complex.

And so it's a huge challenge to put all of this into a cohesive form. So, you probably know that Google has a company called DeepMind that developed the

famous AlphaFold platform. It's a computer platform that has been able to predict protein structures. And DeepMind has now created a drug discovery company called Isomorphic, and there was just a recent interview with the CEO, Demis Hassabis, who described that they will now begin to apply the DeepMind computing power to drug discovery and development. And among the programs that they will tackle will be Parkinson's disease. So, this is one example of how the data that are available now openly through The Michael J. Fox Foundation and ASAP efforts are already beginning to be used for much, much greater efforts.

And I'm also aware of several pharmaceutical companies partnering already with the CRN, with this consortium that was created by the two foundations. And so, a lot of exciting developments are coming along that I'm sure will bear fruit sometime in the next decade.

Marie: Certainly I'm really looking forward to seeing where all of this leads, and your work specifically, we'll maybe dive into some of the details here. We talked about just some of the tools, resources, collaborations, and of course, the tremendous amount of research that The Michael J. Fox Foundation has funded over the years. So, can you talk a little bit more about how your work specifically has benefited from some of these?

Karoly: Well, The Michael J. Fox Foundation has catalyzed, truly, several programs. One of my last companies was a company called Alkhaest, which I started with my friend and colleague Tony Wyss-Coray at Stanford University. And it was based on the observation that young plasma had rejuvenating activity on old brains in mice. And we actually then conducted a study in Alzheimer's disease patients whom we infused with young plasma. And they actually showed a benefit, their executive functions and their activities of daily living improved. So, we had an encouraging human validation for the initial mouse observation. And then we started drilling down, trying to identify the components of human plasma which would be providing this beneficial activity. And we even identified one particular protein which was called eotaxin. It's an inflammatory cytokine, a 20 kilodalton protein that circulates in plasma and blood.

And that increases with aging, and it causes chronic inflammation, and it leads to multiple diseases. So, we conducted two clinical studies where The Michael J. Fox Foundation provided funding. Well, first of all, they provided funding for preclinical studies. And they have contracts with Charles River, you know, various contractors who do the animal models of Parkinson's disease. So, we had validation of a plasma protein fraction that we identified which carried the activity, the favorable activity. And then conversely, we also tested a small molecule which blocked the receptor of eotaxin.

So, we had two approaches. One was based on a protein therapeutic, and the other was based on a small molecule. And both of these programs, the preclinical program was supported by The Michael J. Fox Foundation, and then we conducted the phase II studies in Parkinson's disease with both of them, with the plasma protein fraction as well as with the small molecule agent. And both of them showed very promising activities. So, we are gearing up to do, and when I say we, you know, by now, Alkahest was acquired by the plasma company Grifols, and so they are now gearing up to do a phase III study in Parkinson's disease with the plasma protein fraction. And the small molecule will have to get, will have to go through improvements because even though it showed very nice activity, but then in a long-term study it showed a side effect which would block the long-term development of the compound, but this hopefully can be solved. So, without the support of The Michael J. Fox Foundation these studies would not have been possible and it was a huge benefit to work collaboratively with the Foundation.

Marie: Absolutely. I think this is a really fascinating area of research. And of course, neuroscience as we know is inherently interdisciplinary, but I think there are a lot of different areas in neuroscience that don't necessarily talk to each other or that haven't gotten there yet. So, are there advances in neuroscience, or maybe even other fields outside of neuroscience, whether it's instrumentation, technology, statistics, public health, whatever you could think of that you think Karoly could really accelerate Parkinson's research specifically?

Karoly: Definitely, definitely. This is a rapidly evolving area, and many, I think I would say most pharmaceutical companies have very serious artificial intelligence efforts for every step of drug discovery and development from protein structure modeling, for prediction of drug efficacy, for designing drugs, for mechanistic delineation. And so, this is a very, very serious effort. As I mentioned, the example of Google's DeepMind company getting into drug discovery and development is a very prominent example of how computation is moving into the space, and instrumentation is definitely evolving. You know, I mentioned the ultra-sensitive, ultra-resolution microscopy, as well as the optimization of the Parkinsonian detection, you know, through an Apple Watch or, you know, other devices.

So, it's really remarkable, you know, at every level, from molecules up to devices, there is a huge progress. We recently visited a company that is exploring the possibility of exoskeletons. And, you know, because at some point that Parkinson's patient becomes so incapacitated that they would benefit from some kind of motion aid, you know, basically helping their daily activities. And, you know, this company has the idea to develop an exoskeleton that would help their movement and control it more precisely. So, really, truly at every level, I see incredibly impressive developments. And I think in 10 years, the care of Parkinson's patients will be very, very different.

Marie: Absolutely. I think there is so much potential in, like you said, these different AI applications, the different technology that's being developed to facilitate, whether it's diagnostics or just management of the disease, as well as some of these mobility aids, I think are really exciting, whether it's exoskeletons or other approaches to really facilitate mobility and allow people to continue doing the things that they want to do every day. And we talked about this throughout our conversation, but I love it to think about the future here and think big Karoly. So. looking at all of the different kinds of work that you are doing today, how is your work really bringing us closer to finding a cure for Parkinson's or maybe contributing to improved therapies for people with Parkinson's?

Karoly: Well, I, as you noted, you know, I already alluded to this a little bit, but I have greatly enjoyed working with Bayshore as well as The Michael J. Fox Foundation and ASAP. These are really high quality organizations, and it's been a true pleasure to partner with them.

I personally have, you know, had these two projects, which I mentioned to you, and I really hope that one of them will bear fruit. Particularly the plasma protein therapeutic would be a huge help, and it really supports muscle function as well as cognitive function. So, it could be something very valuable. But beyond these, I also mentioned to you something that's a very different angle.

And it sort of relates to the collaborative spirit of the Bayshore, Michael J. Fox, ASAP ecosystem. Nine years ago, I organized a conference which was entitled “Translational Neuroscience,” and I invited 40 key opinion leaders in the field because the development of drugs for CNS diseases is so hugely challenging. And many companies back in the 2000s, very visibly and vocally exited the discovery and development of CNS therapeutics, including Parkinson's. AstraZeneca, BMS, Pfizer, you know, many of the leading companies just announced that they are not continuing this effort because the models are not good enough, they don't translate to humans, the development times are very long, the success rates are very low, biomarkers are poor, and so on and so forth. I felt that finally, neuroscience is really making progress in this space, and imaging now allows us to look into the brain and functional imaging using MRI, PET imaging allows us to visualize many processes, molecular mechanisms are getting much better understood, delineated, and the multi-omics efforts, the proteomics, genomics, the genetic associations of patients with diseases made such huge progress that I felt that the field needed to be facilitated and catalyzed. And so I organized this meeting nine years ago and published a book about it entitled *Translational Neuroscience*, which had very good feedback, and you know, the 40 participants as of today remember it fondly.

And Bayshore has now asked me to organize a sequel to this. So, in fact, next April, I will gather, now probably more like between 50 and 60 key opinion leaders from every aspect, from neurology, psychiatry, translational opportunities, therapeutic opportunities. I've also invited investors and industry leaders, so the entire ecosystem. And we will be holding this meeting here in California. And I expect that this meeting will be another forum where we will exchange ideas. And hopefully, this will also help catalyze new discoveries and drug development opportunities for Parkinson's disease. So, this is an exciting time. I am deeply involved in the organization of this conference, and I hope it will be a success like the previous one was.

Marie: I think that's fantastic. It's wonderful that you're able to bring together all of these different stakeholders in the same room to really address some of these huge problems. And I know we mentioned it right at the beginning of our conversation, but you're also involved with a foundation that you developed or created. And I'd love to touch on that as well if you're comfortable.

Karoly: Yes, I actually am on the board of a foundation in Germany where we are bringing young, talented neuroscientists to Heidelberg, specifically. I also have a foundation which I created with a former neuroscientist, Chica Schaller, which is called the Schaller-Nikolich Foundation. And you will be very pleased to hear this, that I support young women in science. I also created a prize, the Peter Seeberg Prize of neuroscience, which is given out by the Society for Neuroscience. It's a major neuroscience prize, and the recipients are getting the prize for lifetime achievements. And the first recipients have been prominent neuroscientists. Last year, it was Robert Malenka, who is a professor at Stanford University.

And he has been a pioneer of synaptic biology and characterizing the molecules involved in synaptic transmission, as well as in diseases. So, I'm really enjoying the work, the philanthropic work myself. And it's very rewarding to see how a foundation can contribute to fostering scientific progress.

Marie: Absolutely. And Karoly, we truly appreciate all of the amazing work that you're doing on all of these different fronts to move the field forward and to have an impact on people with Parkinson's disease. So, thank you so much for all of the work that you're doing. And thank you so much for your time today. It was a pleasure to chat with you.

Karoly: Thank you. That was fun to talk to you. And I hope we collectively contribute to new Parkinson's treatments.

Marie: Well, Karoly, it’s been such a pleasure to chat with you. And listeners, it has been great to have you with us as well. If you want to know how The Michael J. Fox Foundation can help your research, please visit

michaeljfox.org/researchresources. And you can find new episodes of this show each month on the MJFF website or on your favorite podcast platform. When you have a moment, please subscribe to our show to make sure you don't miss out on our outstanding lineup of upcoming episodes. We look forward to connecting again with you in our next episode of the Parkinson's Research Podcast.