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Speaker 1: Navigating Parkinson's disease can be challenging, but we're here to help. Welcome to the Michael J. Fox Foundation Podcast. Tune in as we discuss what you should know today about Parkinson's research, living well with the disease, and the foundation's mission to speed a cure. Free resources like this podcast are always available at michaeljfox.org.

Akbar Gbajabiamila: Welcome to The Michael J. Fox Foundation Parkinson's podcast. I'm your guest host, Akbar Gbajabiamila, and we've got an interesting show today because we're going to be getting into genetic discovery in African population, which also paves the way to better understanding Parkinson's. We've got a great lineup of panelists today. We're going to first start off with Ekemini Riley, and she's a managing director at ASAP. Our next panelist is Alyssa O'Grady and she's vice president of clinical research for The Michael J. Fox Foundation.

And then our final panelist, Dr. Njideka Okubadejo, she's a professor of neurology at the University of Lagos College of Medicine. I want to just jump right into this because for those listening, my father was diagnosed with Parkinson's in the late '90s, early 2000. And I say it that way because it was first misdiagnosed and then later we found out, oh, my father has Parkinson's. So I guess starting this conversation off for us non-scientists, let's break this down. What exactly is this discovery and why is it important to the field? I'll start with you, Njideka.

Njideka Okubadejo: Thank you, Akbar. So the understanding that we have is that genetics contributes to the risk of a person developing Parkinson's disease. And most of what we know about the role of genetics has been from research that has been conducted in European populations, in the US, in Europe, and so forth.

And what this study enabled us to do was it gave us a unique opportunity to better understand how Parkinson's disease comes about in people from Africa or people of African ancestry, and to generally diversify the field to help us get that better understanding, and working together with our collaborators across the world involved in the GP2 network that we'll hear about shortly and including nearly 200,000 people in the study.

We made an unexpected, but really important discovery, and we found that a variant in a gene known as GBA1 in the African ancestry population increases the risk of people developing Parkinson's disease in that population. And this is something that hadn't been discovered or described in other populations before. So this variant is virtually exclusive in persons of African and African admixed ancestry and was present in about 40% of the participants in our study.

And just to say that this wasn't sort of a one-man show, it was a global coalition that included nearly 40 neurologists from Nigeria and colleagues in the GP2 Program at the University College London, at the NIH, and of course, our BLAAC-PD colleagues from the US and 23andMe partners as well, and our partners from The Michael J. Fox Foundation and ASAP, without whom none of this would've happened. So in a nutshell, that's what the discovery is about.

Akbar Gbajabiamila: So this GBA variant, if I'm understanding it correctly, so you're saying that's unique to Africans, African Americans, and why isn't that found in other groups, Europeans, Asians? Why wouldn't that be? Could you break that down?

Njideka Okubadejo: So that's absolutely correct. The way that genetics works is that even though we all share a lot of commonalities in terms of our genetics, we also vary depending on our ancestry or our ethnicity. And so it means that for studies, one glove doesn't fit all. And whereas the GBA1 mutation in general is the most common... GBA1 is the most commonly associated gene with Parkinson's disease risk in general.

The specifics of what changes in that gene confer that risk vary by ethnicity. So it depends on what we have inherited along the line from our forebearers. And so the specifics of the changes in the GBA1 gene in Africans apparently differs from that in Asians or Europeans and other ethnicities. And it really buttresses the need to have a diverse population studied when you're thinking about the genetics of disease.

Akbar Gbajabiamila: Okay, and where were these samples collected, just to be clear?

Njideka Okubadejo: We included about 200,000 participants comprising of people with Parkinson's disease and comparing them with people without Parkinson's disease. And so the majority of participants with Parkinson's disease were from Nigeria. And it was a study that was spread across virtually all the states in Nigeria. Most of the ethnicities within Nigeria were included. But we also had participants from a study called BLAAC-PD, which is taking place in the US.

So those are participants of African admixed ancestry, so African Americans were also included in that study. And then we had controls from Nigeria, from the US, but also from 23andMe who collaborated on this study that were people of predominantly African admixed ancestry, so African Americans.

Akbar Gbajabiamila: Wow. Okay. So my last name, actually the first three letters are GBA. Does that automatically put me at a risk? That was a joke. That was a joke. So the discovery that was found in the GBA gene, now why is this gene an area of interest for Parkinson's disease researchers, Ekemini?

Ekemini Riley, PhD: So this gene and several others are of interest because they've been associated with Parkinson's over the years. So for context, there are more than 300 GBA variants that have been identified across several diseases, many of them being

linked to Parkinson's. And as in Njideka mentioned, this gene has been mutated most frequently in Parkinson's disease. About five to 15% of patients with Parkinson's have this particular mutation. So it's of real importance as we're thinking about how do we understand how Parkinson's develops, how it progresses.

This is something that's key. So just to give a little bit of background, the GBA gene tells your cell how to make a protein called GCCase. And that protein lives in the recycling center of your cell called the lysosome, which I'm sure many people have heard that particular term. And in these recycling centers, that's where all of the damage and faulty parts of the cell are removed and recycled, and GK is particularly important for this.

So GBA variants, they go on to alter GK's activity, whether it's making it more active or less active, and the cell isn't able to work properly. And the consequence of that, you get a lot of internal cellular damage which ladders up to Parkinson's disease and others, which is the running hypothesis.

Akbar Gbajabiamila: So if, for example, I think about my father, so I'm assuming my father, Nigerian, Parkinson's, could that then mean that that gene is in myself and my siblings? Is that the way genetics work? I mean, because I got his good looks and his height. So I mean, I'm just trying to figure what else I got.

Ekemini Riley, PhD: I mean, it's possible, right? But you'd have to be sequenced.

Akbar Gbajabiamila: What does that mean, sequenced?

Ekemini Riley, PhD: Sequenced, that means taking your blood and actually looking at the particular DNA string of you and your siblings and your parents to see whether the GBA gene is in fact mutated in your family. It doesn't have to be, but it is a risk factor.

Akbar Gbajabiamila: Could the mutation be stopped? God forbid, I mean, but let's say you see something, could something happen to where it could be stopped once you get that type of information?

Ekemini Riley, PhD: So that is what is the foundation of the whole area of drug discovery and understanding the consequence of mutations, which again, this is why it's important to ASAP. We want to understand what is the consequence. Once you know that you have a mutation, what are the other cellular consequences that happen? And is there any way that we can affect any of those cellular consequences from taking hold and causing disease or making disease worse?

So I would say that is a whole massive area of study, which is why this discovery is super important and really exciting because it gives us a window to say, oh, there's another avenue that we should be looking at to understand what consequence this has in a cell and in a person to see if we can target it.

Akbar Gbajabiamila: And so when we're looking at the discovery, for those out there who are maybe even taking care of people with Parkinson's, who are their parents, and you're looking at this type of testing, I want to just get straight into this one because I think especially in our community, there has been this mistrust when it comes to giving up. So as excited as I am about going like, hey, because I see how it has wrecked my father and I would want to know to get ahead of it, I'm also apprehensive and going, well, what do they really do with that data?

How do I trust the information and how do I trust the responsibility, the efficacy of the people collecting the data? How does that work? How do you ensure people, because there is that, right? You think of some of the historical things that have happened in the past, especially with African Americans and abroad.

Njideka Okubadejo: Sure. So Akbar, that's really important, and one of the things that we've been very careful about and very mindful about is to ensure the confidentiality of the participants in our study. So in the process of sharing the data and so forth, we entirely remove all personal information from the study samples in order to protect the identity of the participants. And that's really important. The ethics bar for this collaboration is really set high. The other thing is that the way that we've operated in terms of engaging the community has also been very helpful in reassuring people of what the motive is.

So for instance, from the Nigerian perspective, we didn't start out engaging people with Parkinson's from the point of when the study started. So prior to that, we had concerns about the treatment of people with Parkinson's. So we had set up a multidisciplinary team at a clinic where we care for people with Parkinson's. We'd also use our networks to advocate for medicines, for treatment for people with Parkinson's, for instance, at the Lagos University Teaching Hospital.

And it was after several years of having engaged that community and having them be comfortable with us that we started some of our research projects, including this one. So I think that community understands that our primary concern has always been how to improve the quality of care that they receive. And it's off the back of that that we started the research project.

There was trust building already, and we've also continued to engage them and update them about the progress that we've made and any challenges we've encountered. So there's that partnership with our research community that's been also very helpful, I think.

Akbar Gbajabiamila: Okay. And Alyssa, I want to get you in here too. Talk about too how Parkinson's disease and genetics and how people should think about genetics as a risk factor.

Alyssa O'Grady: Scientists believe that genes, the environment, and aging altogether cause Parkinson's disease, meaning that genetics are one factor that could contribute

to someone's overall risk for Parkinson's. In other words, genetics can help scientists understand who gets the disease, who doesn't, and why, but it's just one piece of that overall risk picture. We know that some changes in genes, including the GBA1 variant that we're discussing today, can increase somebody's risk of having disease.

However, having a gene variant linked to Parkinson's does not mean that you will absolutely develop the disease. It just increases your risk. There's still a lot that we have to learn about this variant, but overall it's actually really good news that we have discovered this because it gives researchers a clear target to investigate moving forward. And give an example of something similar that happened in the Ashkenazi Jewish population, several years ago, researchers identified other GBA variants.

Like Ekemini was mentioning, there's over 200 GBA variants that we know about that increase risk for Parkinson's. And the variants that were discovered were more prevalent in Ashkenazi Jewish populations. That discovery of those GBA variants led to a whole wave of treatment approaches that are currently in development and in testing. So we're hopeful that further research on this new variant that's been found in folks of African ancestry will illuminate new targets for another new generation of therapeutic strategies.

Ekemini Riley, PhD: To jump in here and come back to some of the points that you mentioned, Akbar, one of the things I'm most excited about when it comes to GP2, because the program did not set out to just go into various countries, swoop in, grab material and leave, and come back to the States and sequence it and use it to make amazing discoveries.

But I think the fact that we've been intentional about working with people in various countries, working with experts and physicians and scientists in their countries to help capacity build, you're helping to build that trust because people see their people also working with them. You're leaving stuff behind in country, but then also bringing together that whole coalition as Njideka was mentioning to really fuel a discovery.

I think that is what we need to lay the pathways for building back trust again, because we don't want our populations to be excluded from these studies that will then lead to therapeutic development down the line.

Akbar Gbajabiamila: What happens though when groups that have been underrepresented in these studies, what's the risk in that?

Ekemini Riley, PhD: What's the risk in excluding them, you mean?

Akbar Gbajabiamila: Yeah, in excluding them.

Ekemini Riley, PhD: Yes, in excluding them, you don't have a real full clear scientific picture. You'll really only have something in part. Even if you remove the moral argument of including everyone in science or in a discovery, at the end of the day, your science is incomplete when you don't have as many people as are in the world being represented in your studies. You really have a partial outlook when you exclude whole populations.

Akbar Gbajabiamila: So right now I think of my father and I think about the routine that he used to do, and he used to have a whole bunch of medicine, but we've gotten it down to his levodopa medication. And let's just say for example, levodopa or any of the other types of Parkinson's meds, were those medicines, were those based on a very small group of people before they realize that this could work, or is that different in how they come up with medicine and treatment? I guess the follow-up to that was with something like this, could this lead to better medicine? So those are a two part question.

Ekemini Riley, PhD: I would say I think it could lead to medicine that could be more targeted. I mean, the analogy I tend to use is from the cancer field because that's the one that's most salient to me, where you go in, you have your cancer, you get it sequenced. And say your cancer expresses an estrogen receptor, then you can get a drug that targets that estrogen receptor as opposed to a broad drug that will target every cell in the body indiscriminately.

The goal is to try to get to something that is most targeted in the hopes that targeting that particular thing will help your symptoms if they're all caused by that mutation. So I would say the hope here is to get to something more targeted for certain populations.

Njideka Okubadejo: And I can add to that to say that one of the opportunities we have here different from, like you said, a more generic medicine like levodopa is that discoveries like this can help us understand the mechanism, how the change in the genes results in Parkinson's.

We have to hope that we can use that to develop what we call biomarkers, ways in which we can diagnose the disease earlier and ways in which we can even possibly, hopefully in the future, prevent the disease from occurring or from progressing in addition to finding targets for treatment for those who have developed the disease already.

So we refer to that as personalized medicine where one glove doesn't fit all, and we realize that the way that each person develops a disease might vary, the way that they handle the medicine that they're given might vary based on their genetics. And we're hoping that this is where all this will lead.

Akbar Gbajabiamila: Alyssa, The Michael J. Fox Foundation has been obviously at the forefront of this as far as research. This is just one of those, not even an odd question, but when you're a child of a father that lives with Parkinson's, you think, how close are we

to finding a cure, eradicating it? And if we're not close, does something like this being able to go out, get more samples and really understanding disease, does this move us forward 20% the way, 30% of the way? Are we almost there? You know what I mean? I know I sound like my kids. Are we there yet? Your thoughts?

Alyssa O'Grady: We're absolutely closer today than we were before this GBA1 finding and breakthrough. The way that I think about it is for us to have the best chances of getting to those better treatments and getting to that cure and, to Njideka's point, one day getting to a drug that can stop Parkinson's before it even stops. We need to have multiple shots on goal. We need to have many different approaches to increase our chances of success.

And as we've been talking about the GBA1 variant finding, it gives us clues as to what is causing Parkinson's in a particular population, and those clues give us hints for how we can go about treating the disease. So it's another pathway that's opened up to us for drug development that you can add in with all of the other approaches that are currently in testing.

Akbar Gbajabiamila: Ekemini, you were talking about this, we've learned about this massive GP2 study and that is collecting genetic information from communities all across the world, Brazil, Tanzania, Ethiopia, Bangladesh, Norway, and so many more locations. But how did this particular discovery take place? I heard this was kind of a bit of a happy accident. Can you take us behind the scenes as to how you guys discovered it?

Ekemini Riley, PhD: I could take you behind the scenes, but I actually think it's probably worth Njideka really talking through it because it's a lot of her team that was involved in this. Njideka, I'll turn it over to you and I'll add some more color.

Njideka Okubadejo: Sure.

Akbar Gbajabiamila: And yeah, and make sure you give us the insight. Was it like, oh my goodness, it was right here. Come on.

Njideka Okubadejo: Virtually. Like a company said, GP2 is very invested in capacity building and ensuring that everyone understands what's going on across board. So we were at a point where we were not expecting to find anything basically, and it was just the exercise of helping the trainees on the Nigeria side understand how to run the analysis and understand the data.

So we had this group meetings that we had set up between the Nigeria team, the rest of the GP2 team, and it was in the course of those meetings looking at the data that this popped up. And it was entirely by surprise. And we were sort of like, oh, are you really sure this is happening? And Ekemini, over to you.

Akbar Gbajabiamila: And for those who are maybe just listening in for the first time, Global Parkinson's Genetics Program. But yeah, go ahead, Ekemini.

Ekemini Riley, PhD: So when I first heard about this whole piece, I had to restrain my excitement, because I said to myself, "This is part of the reason why we established a program like this." So to take everyone behind the scenes, all the way back, GP2, Global Parkinson's Genetics Program, as you just mentioned, was the first resource program that was launched in 2019 as a part of ASAP. So GP2 is a part of our umbrella of programs and core to our mission is building ecosystems that can facilitate that collaboration.

So thinking all about what Njideka just described and pulling together those data groups who are constantly in contact with each other and then building out resources and data sharing to accelerate discoveries. And in science, discoveries tend to take a while. So hearing this five years after GP2 has been established, and I know how much it takes to actually set up all the consents and agreements and work across all these different countries that are a part of the constellation of people in GP2, and I thought to myself, it can't be.

And so I asked for, I'm like, I want to be walked all the way through this to just see where we are, what this means. And that is where my excitement really started to balloon to say this is seeing it all come full circle and the first realization of our mission. We knew setting something like this up, we just said, okay, great, we're going to get someone along the way, but it's going to take time. And seeing something like this come out just within five years has me, one, hungry for more, but just excited at the possibilities that are going to come down the line.

Akbar Gbajabiamila: And for reference, and again, because I'm sure you're looking at all sorts of stuff, my basic knowledge is from science class in the eighth grade and I stopped paying attention afterwards. How in your face was it when you guys discovered it? You talked about how unbelievable... Does this typically take 10, 15, 20 years? You said it usually takes a long time. How long is a long time?

Ekemini Riley, PhD: It usually takes a while. When we're talking about discoveries in this level of magnitude, yes, we're talking on the order of 10 to 20 years. But when I saw the plots that showed this signal, I thought to myself, well, this is screaming, but you only see it when you include the information from the Nigerian populations and the BLAAC-PD group. That is the only time that this signal actually pops out. When you remove those populations, you don't see the signal at all.

It's a real testament, as Njideka said, at the very top that you need to have, I keep hammering this point home, completeness. It's not to say that what we've discovered before is wrong. There are legitimate discoveries that move the field forward, but there are more discoveries that we can come about if we include more populations. And this is a real example of that.

Akbar Gbajabiamila: And is that more populations, as in more Africans, more African Americans as it relates to Nigeria, of course, most populated country in Africa? If you go down to Sudan or maybe Congo or somewhere, would those same things show up as well or is it unique to the Nigerian population?

Ekemini Riley, PhD: Njideka, from what I understand, this actually held up quite well across the continent from the cohorts that we have, as well as in BLAAC-PD. I mean, we're talking African admixed population. So this is something that is not just Nigeria specific, but really broadly across Africa. And when I say more populations, I mean more populations globally.

Akbar Gbajabiamila: Globally. So you're talking about everybody around the world.

Njideka Okubadejo: Yes, absolutely.

Akbar Gbajabiamila: I wanted to circle back to this because this was something going back to just being skeptical. I was having this conversation and just always skeptical by giving my DNA. And I remember a while back, my wife, who's mixed, we sometimes have fun racial conversations. And she's half Black, half white. And she goes, "Well, you don't know if you are truly all the way Nigeria." I was like, "Babe, both my parents came to this country from Nigeria." I was like, "I'm quite sure I'm 100% Nigerian."

There's no doubt about that. She started bringing other historical facts. I said, "Look, I'll take this 23andMe," but I'm skeptical. So I'm going to say my name is like John Smith. And so I just put some random name and it came back and then I started getting a little nervous. And it came back 99.9% Nigerian. I don't know why they had left off the 0.1. I mean, it said Southeast Africa. Anyways, but I was hesitant to put my personal data out there. It's like, how do we know our personal information is...

I know there's the privacy, Njideka, that you talked about, the privacy, but what about what they do with that information? Again, I'm going to get conspiracy theorists here. There are a lot of those people out there. I am not one of them. But could they somehow take this information and use it in a nefarious way against Africans in... I mean, obviously anything is possible, but how do we increase the trust level of this?

Njideka Okubadejo: So from the point of a scientific research team, we do our very best to ensure that we protect the personal information and separate the personal information, identifiable information, information that you can use to trace back to the person. We separate that entirely from the samples and from the data, so that we reduce the likelihood that some crazy person will try to misuse the opportunity that we have been given to explore people's DNA. So that's one of the things we're very cautious about.

Akbar Gbajabiamila: That's good to know.

Njideka Okubadejo: Yeah. So very cautious about that. Thankfully, there's not a lot of link between public databases and the research database. So even in terms of the platforms where data is stored, these are as secure as they can possibly be based on the current technology that's available. We're very, very particular about that, and GP2 provides the support to enable that that level of security is in place. We're also in a conversation globally to ensure that things are done right from the ethical perspective.

So we hope that with the ongoing conversations, people don't do things like stigmatize populations based on the health differences or disparities that they have. And that's one of the reasons why it's important to have that engagement that includes professionals from all over the world so that concerns can be raised, discussions and decisions can be taken that ensures that we're all on the same page when it comes to the meanings of research findings and how we apply them.

Akbar Gbajabiamila: It's like today I feel good that the efforts and the findings are moving us towards really improving and hopefully eradicating Parkinson's disease. I think this will be my last question on this whole idea of the trust, but it's a big one just because of where we are in the world. First is, do you find the same type of hesitancy in Africa that you have here in the United States with African Americans? Do you see that there are similarities and hesitancy in giving up personal information? And when I'm talking about health information, your DNA.

Njideka Okubadejo: Yeah. So I would say yes and no. Yes with people who have had an unsavory experience in the past or have heard about people who have had an unsavory experience. So people who are more exposed and have had that perspective ask questions. They want to know what exactly it is that you're going to do and how you're going to protect them. And they're very inquisitive about that.

On the other hand, however, in general I think it's about education and awareness. The less information people have, the more hesitant they are also sometimes. So it's a mix, I think. But certainly prior experiences that are not pleasant reduce the likelihood that people will participate in research. But when they've had a good experience or when they've been well-educated and when you've been transparent with them about the motives and what's going on, they're more willing to participate.

Akbar Gbajabiamila: Okay, and then the second part to that question, and that's open to any of you to answer, it feels like when we talk about underrepresented communities, it feels like African Americans, Africans tend to be the target for everything "bad." We think about cancer, oh, if you're African, you're more likely to get cancer. High blood pressure. If you're African, you're more likely to get... If you're COVID, I remember with COVID, oh, if you're African, you're more likely to get it. I started to feel like, hold on, are you just saying that to get at us, or are you saying that because we're defective?

Are you saying that because you want something and you want us to go rushing towards this? I remember when COVID was my breaking point. I'm like, are we the weak spot for everything? Are we more likely to get everything? How do you explain that when that is being presented as we are the, I don't know, I guess there's no other way to say it, we're the weaklings. Your genetics are weakened, so you're more likely to get everything because on top of that, you're underrepresented.

Ekemini Riley, PhD: I love the fact that you're just going to come with the question and just put it out there instead of dancing around it. This is my kind of conversation. I will say that when one comes to understand that genetics are not the whole story, like Alyssa mentioned, there are so many determinants of health that contribute to overall health status if we're talking particularly here in the States.

And I think once we start to divorce the genetics of being African American, African, Black, what have you, every one of us under the banner of African descent, from the lifestyle, the components that make living very onerous for certain populations here in the States, I think that's where you'll start to understand where some of those contributors lie. Because what you've just mentioned, I've heard so many times. I mean, of course, I'm sure we all have. And I think that understanding that it's not necessarily genetics, there are different drivers.

Akbar Gbajabiamila: And environmental factors. And when I say environmental factors, I'm talking about not only stuff in the air, but also to the stresses from all the other stuff, politics and all those other types of existential things.

Ekemini Riley, PhD: Exactly. There are a lot of existential things that contribute to how one presents medically, for sure.

Akbar Gbajabiamila: All right, I want to dive into discuss DEI. This is something we're hearing a lot about in science and for good reason, but it's complex. Let's get into it.

Alyssa O'Grady: DEI stands for diversity, equity and Inclusion. And I wanted to start by talking about why DEI work is important to science and also why it is so critical to The Michael J. Fox Foundation's mission. So our mission is to advance better treatments for Parkinson's disease and to one day find a cure for Parkinson's disease that will benefit the millions worldwide who live with the disease, not just a narrow slice of people who live with the disease, the global population that lives with Parkinson's.

So that means that we have this social imperative, but also this scientific imperative to understand the disease across diverse populations and to foster inclusive research. This African consortium that led to the GBA1 variant finding is an amazing example of that. There are other examples within GP2 of working to engage additional international genetics consortia to bring research

participation opportunities to underserved communities in Latin America and India and East Asia and more.

And then The Michael J. Fox Foundation also supports DEI work outside of GP2. So for example, we are partnering with community groups to share educational content on Parkinson's and to promote research participation opportunities. And we're also funding researchers to investigate barriers and develop solutions for increasing research engagement in specific underrepresented populations, all with the goal of helping us get that full picture of the Parkinson's disease experience that science really needs to move forward.

Akbar Gbajabiamila: Ekemini, can you discuss PD research and how it has historically been focused on individuals of European ancestry?

Ekemini Riley, PhD: Well, one, I think you've said it, that is the case, but PD is not alone in that. That is something that is ubiquitous across disease. So disease has been predominantly studied in people of Northern European ancestry. And I think as Alyssa mentioned, there's a social imperative. There's also the scientific imperative of really being more complete with our studies, from basic discovery all the way up to clinical research.

Which again, I mean, that's one of the main reasons why GP2 is one of our resource programs and also why we've partnered with The Michael J. Fox Foundation to implement this suite of programs. I think our organization bring together the full compliment of things to address science from all of its aspects, including diverse populations. So I'm excited about where we're headed.

Akbar Gbajabiamila: Wouldn't the lack of people of color leading these studies directly impact recruitment? I must say, for those listening and not able to see that this is a panelist of women and women of color. Talk about that.

Njideka Okubadejo: Right. So it's absolutely important to have someone that looks like you, understands your culture, understands where you're coming from, participating in and leading the research that you participate in, because that ensures that you have representation, you have a voice, and that the issues or peculiarities that may relate to you are represented in the research and in the planning of it.

So it's absolutely important. It's also important to in a global collaboration like we have to have people from underrepresented populations even lead some aspects of the research because it creates an opportunity to build capacity and to bring our different perspectives and strengths to the study. So yes, it's absolutely important.

Akbar Gbajabiamila: I love that.

Alyssa O'Grady: I completely agree with everything that Njideka just said. And I'll also flag that GP2 is supporting training programs in underserved communities outside of the

United States in the interest of increasing global will and capacity for Parkinson's genetics research. And in addition to that, The Michael J. Fox Foundation supports the Edmond J. Safra Fellowship in Movement Disorders, which aims to grow the global base of movement disorder specialists around the world.

Akbar Gbajabiamila: Ekemini, any thoughts to add to that?

Ekemini Riley, PhD: I would say I agree 1,000% with Njideka and Alyssa. And to double down on that even further, I think that's why it's super important for everywhere across the pipeline that we are trying to bring in people who are underrepresented into science, into medicine, so that there are enough of us down the line when we need to lead the studies, when we need to plan the studies, that there are enough of us available to do so. So I couldn't agree more.

Akbar Gbajabiamila: All right. Is there any last words you might want to add to this as it relates to being able to get people in for us to study and how we can increase in that area?

Alyssa O'Grady: I first want to thank all of the participants who made this incredible genetic breakthrough possible. The clinical research cannot move forward if we don't have people raising their hand to be a part of it. So really wanted to thank the entire group of participants who led to this genetic finding. And then on top of that, I wanted to say participating in research is empowering. It's something that you can do today to help advance our search for a cure. For the Black and African-American folks who are listening today, you can learn more about the BLAAC-PD study that Njideka mentioned.

That's B-L-A-A-C-P-D, and you can find out more at blaacpd.org. In addition to that, the Parkinson's Progression Markers Initiative, which is MJFF'S landmark research study that's on a mission to stop Parkinson's, is exploring how brain disease starts and changes in people of all backgrounds. And you can learn more about PPMI at michaeljfox.org/ppmi. So my last note to go out on is get involved in research.

Akbar Gbajabiamila: Yes, get involved. Thank you so much for participating in this. I found it very beneficial. I'm actually going to use some of these acronyms to impress my wife so she thinks that I'm smarter than I am. But in all honesty, Parkinson's research studies urgently need volunteers to help move science forward. I pray by the grace of God that soon in my lifetime and in my father's lifetime, we'll be able to find the cure for Parkinson's. Special shout out to The Michael J. Fox Foundation for hosting this conversation. Thank you so much.

Alyssa O'Grady: Thank you.

Njideka Okubadejo: Thank you.

Ekemini Riley, PhD: Thanks.

Speaker 1:

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