

Amritha Jaishankar

Narrator: You're listening to *BioTalk* with Rich Bendis, the only podcast focused on the BioHealth Capital Region. Each episode, we'll talk to leaders in the industry to break down the biggest topics happening today in BioHealth.

Rich Bendis: Hi, this is Rich Bendis, your host for *BioTalk*. Also, the CEO of BioHealth Innovation, trying to help our emerging scientists, researchers, and small businesses in the BioHealth industry within the BioHealth Capital Region. We have a very interesting guest today, a first-timer that we've never had on *BioTalk* before. I don't know why it's taken so long, but she will tell us that this will not be the last time on *BioTalk*. We're going to have frequent interactions based on everything she does for our region. Our guest today is Amritha Jaishankar, who is the Executive Director, Maryland Stem Cell Research Fund.

Amritha Jaishankar: Great. Thanks so much for having me, and I'm excited to be here.

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Rich Bendis: Well, thank you. I'm glad you're excited. Hopefully, you'll be excited when we're done as well. But the first thing we always do is try to have you introduce yourself because that's the best way for them to get to know you. So please give our listeners a little bit of your background on sort of education, how you progressed to get to where you are today within this great Stem Cell Research Fund entity.

Amritha Jaishankar: Great. Happy to. So thanks very much. As you said, I'm with the MSCRF, and I've been here since 2016. But for my background, I'll go way back and start. It's been an interesting journey. I grew up in India, where I did a lot of my early schooling. I think I've been interested in science for as long as I can remember. And my first degree was in zoology. So looking back, it was one of the best ways to study development and stem cell biology. But obviously, that's not what I was thinking then at all.

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But I've always been interested in understanding the genetic basis of diseases and in gene therapy, although what it looked like then was very different from where we are now. But that took me to England, where I worked, like, six different jobs, got a master's in genetics. And this was at the institute where they discovered DNA fingerprinting, so that was pretty exciting. And then, I worked there for a little bit in a cancer lab,

other labs, and then moved here for a PhD, which is when I first started working with stem cells. And it was an exciting time to be in the field because that's when the Nobel Prize-winning find of induced pluripotent stem cells came on the scene. And so, I was working with that, and that led me to NIH, National Institutes of Health, where I started my postdoctoral training in the stem cell neuroscience genetics area, and then this gave me the opportunity to be a founding member of a nonprofit institute that we built at Hopkins, where I worked with several industry partners to advance treatments for neurodevelopmental disorders.

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But this gave me the platform to make contributions beyond research and have a broader impact more at the intersection of science and business but also communications, business development operations, strategy, and just much broader. But at the end of the day, I was still really drawn to patient-oriented, mission-focused work. And so, this is what brought me in 2016 to MSCRF to spearhead an Accelerating Cures Initiative. And I've been here since. So I've been in science my entire life, but specifically in the stem cell space since 2004, in Maryland since 2010, and yeah, somehow in a roundabout way, my training across various countries and my experience inside and outside the lab has brought me here. And now I get to sit down here with you and speak. So I'm very happy to be here.

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Rich Bendis:

Well, I think that's a very interesting background. And also, having that international experience in three different continents, I think, is very beneficial to what you've done with your career. And then, having the opportunity to work with one of the leading academic institutions as well as NIH, you've really had a very good background to prepare you for what you're doing today.

Amritha Jaishankar: Yes, absolutely. And it's been a fantastic experience. Cell therapy really is a global industry, so I've definitely leveraged my connections in the industry across the globe to help us move some of these discoveries to the clinic.

Rich Bendis:

And then, when you mentioned NIH, you've probably read, as I have, that Dr. Collins is going to retire at the end of the year. Maybe you can attract

him to do something with you because he'll need something to do next year.

Amritha Jaishankar: That would be great, wouldn't it? There someone we fund who actually worked closely with him, so we never know.

Rich Bendis: You never know what will happen. He might end up, if he's not with NIH, in one of the emerging companies within Maryland, which would be pretty exciting.

0:05:02 So you keep referring to it as MSCRF, which is the Maryland Stem Cell Research Fund, which is an easier way to refer to it. So I'll refer to it as MSCRF from now on. But let's introduce the listeners to the Fund and tell a little bit about how it was formed, why it was formed, and we'll get into what it does today.

Amritha Jaishankar: Yeah, so we were established through the Maryland Stem Cell Research Act of 2006, and the purpose was to promote state-funded stem cell research and cures through grants, so really, 15 years now since we were created. Although we started giving out grants first in 2007. And so, our focus really is on identifying and fostering cutting-edge research and innovation in the field of regenerative medicine. Our mission is to develop new medical strategies for prevention, diagnosis, treatment, and cure of human diseases, injuries, and conditions through human stem cells.

0:06:00 Or as I say, what we really do is to accelerate stem cell-based research, commercialization, and cures. And we do this through our various funding programs, but also by serving as the connective tissue for the regenerative medicine industry.

Rich Bendis: Then, when you talk about the various programs, I think you have six different programs. Is that correct?

Amritha Jaishankar: Yes, that's correct.

Rich Bendis: Can you talk a little bit about each of them briefly, about the difference between the programs you offer?

Amritha Jaishankar: Yes, absolutely. We offer six different programs, and they're sort of designed around what it takes to transition a promising regenerative medicine discovery from the lab, where the invention occurred, to the

clinic, where it can reach patients, as well as a mechanism to train the next generation of stem cell scientists and leaders. So briefly, our discovery program is for faculty at universities or research institutes based here in Maryland, and the purpose there is to encourage these high-risk, high-reward ideas, catalyze innovation and that next medical breakthrough.

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With the Validation Grant, there's been some IP that's generated, and we're looking to sort of iron out the kinks before we know whether we can form a company or move into a clinical trial. The Commercialization Grant is for startups or an established company developing a new stem cell product, again, based in Maryland. The clinical trials actually are open to any US-based company at the clinical trials site here in Maryland. So we fund this site to help bring these cutting edge treatments here. And then, we have the post-doctoral fellowship, which is really to train this next generation of leaders. These can be in academic or industry settings. And then, recently, we also started the Launch Program, which is to bring new or new-to-the-field folks into the stem cell space because as this field is growing, there are emerging challenges that need new thought, orthogonal ideas or techniques to solve some of these problems.

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And so, that was our goal there. So these are the six at the moment, but we're constantly engaged with the industry and always reevaluating where the gaps are. And actually, in the five years that I've been here, we've already changed these programs twice. So we're constantly addressing the gaps. And I would say it largely falls under three pillars, what we do. We foster research and innovation through these university-based grants, where we're really building those teams, helping shape the research and catalyze those ideas and inventions. With the Validation, Commercialization, and Clinical Trials, we're more about building and creating these companies, and what we do here is create value through milestone-based payments, helping de-risk these technologies and advance the science and cures.

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And then, the third thing, as I mentioned, is that we serve as a resource and help these folks with whatever it is they need to be successful. So we're very hands-on, trying to identify each person's unique need and really creating a community around it.

Rich Bendis: One of the things you mentioned, Amritha, is that some or one of the programs, you'll fund things outside of Maryland. And I know sometimes, the assembly gets sensitive when we have Maryland money going out of the state. But I guess in a way, there's a benefit for what you do to attract some of these people that you fund that may not be in Maryland. Could you explain that a little bit?

Amritha Jaishankar: So the money never leaves the state.

Rich Bendis: Ah. Good.

Amritha Jaishankar: Yes, so the company can be located somewhere, but they have a clinical trial site here that we fund. So really, we're almost bringing money here. Our clinical trials are one of the hardest to get into because they require a match, they require an IND.

0:10:02 So the companies are actually bringing money to Maryland because they're matching whatever we fund, they're bringing the expertise, the knowledge, and the cutting-edge technologies to patients here. And so, we actually benefit a lot from this. And the money never leaves the state. We take care of that.

Rich Bendis: Well, thanks for clarifying that for me because now we can say all of the Maryland money stays here, and it actually helps attract other people's money to the state, which is very good.

Amritha Jaishankar: Exactly.

Rich Bendis: Excellent. One thing I wasn't going to ask, but I think it's important to the listeners here because when you hear the word stem cell, it really has different connotations for different people throughout the United States. And I'm sure you have to encounter that a lot with people you come in contact with. How do you address just the basic concept of stem cell research that may be controversial in some areas, regions of the country, political groups, or whatever that may stimulate some interesting conversation or dialogue around it?

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Amritha Jaishankar: Right. And the field has really evolved. So I think I mentioned, most of the controversy seems to be around embryonic stem cells. But I think what people don't know is that we're doing so much work with these other

types of stem cells as well, adult stem cells and what I referred to as induced pluripotent stem cells, where essentially, you can take a skin cell or an adult cell and convert it into a stem cell because that's how much we know to do now. I always say, this honestly is the most powerful technology that exists. It's going to revolutionize healthcare. It already is. Because it's the only way we can create a cure, not just a treatment. I think sometimes this doesn't come across. And it's not something we're used to. It's a one-time thing that creates a cure once we're successful. And so, I think the way we really work with it is to explain what is actually being done and where the cells come from, when they were made, whether we're making new ones.

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I'm always happy to have these conversations. I think the controversies are because sometimes people don't know. And we work really hard. I have to say, we have a very thorough peer review process, we have several regulations in place, we have a commission that also oversees this. So we're very careful about what we fund and the work that we do.

Rich Bendis:

When you talk about some of the things you've funded, how about some of the more interesting or successful things you've funded that actually have helped progress some clinical research or helped get something closer to commercialization that would benefit patients in the world?

Amritha Jaishankar:

Yes, this is the most exciting part of the job. We're focused on stem cell research and cell therapies, but we're disease agnostic, so the impact is really broad.

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We're developing cures for rare diseases, but also for those more prevalent indications that are amongst the top ten leading causes of death in Maryland and across the nation, including diabetes, cardiovascular disease, cancer, Alzheimer's, stroke. Last year, we also funded some work addressing COVID-19-related ARDS as well. We recently launched a YouTube channel also so we can hear directly from some of the folks I work with. But some of the things we talk about there are how regenerative medicine approaches looking at skin is in clinical trials now and could potentially help about two-million amputees and wounded warriors across the country. We talk about how stem cell disease modeling is leading to potential treatments for Parkinson's, which is the second most common neurodegenerative disease that affects over six million people globally. We fund a lot of work in the cardiovascular

space as well. And stem cell and tissue engineering approaches are really being used to address issues of the heart or the blood vessels.

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Again, this impacts about 2,200 Americans each day that die of cardiovascular disease. We've funded work to improve stem cell transplants that have impacted and saved the lives of children, adults, whether it's sickle cell, or primary immune deficiencies, or aplastic anemia, or sickle cell disease. And these approaches have been applied to cancer as well. And some of the stem cell organoid-based disease modeling I was mentioning before are also used to understand COVID-19 now as well. So there's a lot of exciting work that's happening, and you probably also know many of the companies we've supported, whether it's RoosterBio, or MaxCyte, who've really grown here in Maryland.

Rich Bendis:

They just went public on NASDAQ. That's exciting for Doug Doerfler and his team.

Amritha Jaishankar:

Yes, exactly. Yeah, and we funded them even before this Accelerating Cures Initiative.

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And Cartesian, you've spoken to them. We support one of their clinical trials. And then, there's LifeSprout, viDA Therapeutics, Theradaptive, Seraxis. I think you know many of our companies. And we've helped create some of them, we've supported some of them. And most of them have now raised full-on funding between \$6 and \$40 million each, and they're growing now. So again, these are just some examples to come to my mind now. But there are several. So we've had a lot of success with our companies, and faculty, and clinical trials. But I would say yes, we create jobs and generate revenue for the state, but to me, the real impact is improving the quality of life and creating treatments and cures. It's hard to put a value on the lives that we've been able to save. This also translates to reducing healthcare costs for the state. For example, let's say diabetes costs the state economy about \$6 billion a year.

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Developing a treatment for it would potentially have a huge economic benefit. And that's just one. So last year, we funded about 27 different disease indications. So the potential impact is enormous. And with more investment, as we've seen with COVID this past year, the timeline to develop some of this is significantly accelerated.

Rich Bendis: Well, that's really exciting. And I guess you're becoming a TV star, too, with your YouTube channel. So I have to watch out for you because you're going to become competition to the *BioTalk* podcast here, Amritha. So talk a little bit about that YouTube channel. How did the idea come up? What is the channel called? And how will the listeners be able to tune into it?

Amritha Jaishankar: Oh, it's just the Maryland Stem Cell Research Fund's YouTube channel. And really, we're working on spotlighting a lot of our awardees. And I think the idea came up because I find all of this work so exciting, and I'm always talking about it. And I thought it would be really nice to have some faces to the work that is being done.

0:17:05 This is really important work, they're fantastic people, the people that we fund, and it's the highlight of my day to work with them every day. And so, I just wanted to highlight some of them and share with the audience the excitement that I have every day, working in this.

Rich Bendis: Well, we need to make certain that we promote the channel because a lot of the companies you mentioned are people who we've worked with as well. And they're some of the most successful emerging entrepreneurial companies we have within our region, and it's nice that they're connected with MSCRF. But you mentioned some of the really premier entrepreneurs associated with those companies that you have mentioned, and I'm going to have to tune into that channel to look at some of those interviews you've done with them. I think that's fantastic. We'll help you promote that. And I would imagine Maryland might not be the only state that's doing stem cell funding for companies or clinical trials.

0:18:00 If you look across the country, how many other states are doing things similar? They're probably not doing it as well as you're doing it, but how many might be doing something similar to what Maryland's doing?

Amritha Jaishankar: Yeah, so Maryland was really visionary when stem cell funding started about 15 years ago. And at that time, we were close to about \$25 million, but now we're closer to about \$8 million a year. So we work really hard to maximize the impact we can create with that. But there are a few other states. California has actually \$5.5 billion invested in regenerative medicine. And then, there are other states like Massachusetts, New York

that fund some stem cell research directly but also have a lot of infrastructure for cell and gene therapy as well, which we don't necessarily do at this point. Philadelphia is also rapidly growing in this space. So yeah, there are a few states. I think we're doing great in this space.

0:19:00 But our sector has really had a record-breaking year last year with almost \$20 billion in financing, and it looks like we're already ready to outperform that this year. Now would be the time to scale if we want to really keep up and lead the way there.

Rich Bendis: So I guess we need to have the assembly listen in to this because it would be a good place for additional investment, right?

Amritha Jaishankar: It would definitely be. Maryland's really on the map now with what the BioHealth Capital Region's been able to do with developing vaccines. And I strongly believe that cell therapy's going to be our next glory. So it's definitely the place to invest in. Beyond that, I work really, really hard, but some of the hardest conversations I have are with patients or mothers of children who are patients. And people who know me will tell you I constantly work with a sense of urgency, and that's because time is really of essence because this work can save lives. And if anything, this past year has really shown us how important public funding for research and manufacturing is. And we've seen what it can do. So absolutely. I may be a little biased, but I honestly think this is the time.

Rich Bendis: Well, if you're not passionate, then who could be, really? But when you talk about other states and the whole stem cell and gene therapy industry, is there a major trade association or group that helps try to bring people together nationally and around the world on this topic so you can share all of the knowledge of what other people are doing around other areas?

Amritha Jaishankar: Yeah, there are several sort of global organizations that we participate in all the time to get together with these folks, to keep on top of industry trends to make sure that we continue to identify and fund the right ones, so we can bring these resources back.

0:21:00 There are several different organizations that work in specifically the regenerative medicine space.

Rich Bendis: Do you know Morrie Ruffin?

Amritha Jaishankar: Yes.

Rich Bendis: Yeah, Morrie created one of the regenerative medicine associations, I think. And it's based in Baltimore, isn't it?

Amritha Jaishankar: ARM? The Alliance for Regenerative Medicine? Yeah, it's based on DC.

Rich Bendis: In DC. OK, great. It's nice to have one of the leading organizations in our own backyard.

Amritha Jaishankar: Yeah, and they're great collaborators with us.

Rich Bendis: Excellent. What would you like to see happen in the future to enhance your program and the interest in this research area, if you could wave your magic wand? What would you like to do to enhance what you're doing today? Other than get more money.

Amritha Jaishankar: Man, more money is always critical, right? But you know, this is something you've already said a lot, and I've already said, but I'll say it again. Creating an ecosystem is really key to our success.

0:22:00 And so, we work really hard to build that community and create that regenerative medicine ecosystem. And we obviously don't do this alone, so we're all in this together. And we work with all of our colleagues, various folks at TEDCO, with our legislators who support our efforts, with folks at tech council, commerce, and of course, our universities and research institutes, and companies who are all partners in this. But we're also looking to engage more with various players in the cell therapy industry, we're looking to engage more with disease foundations. There are just so many folks we could be collaborating with and building this ecosystem even more. But honestly, resources would be the one that I would try to fix with my magic wand. And we're doing a really good job of identifying the next best technology and supporting it, but we always get a bottleneck. We need more manufacturing, we need more workforce in the area. So these are all things that I think there's an ongoing dialogue, and I'm hopeful that Maryland will lead the way in this as well.

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Rich Bendis: I always say it's about the zeroes. If you could just add one more zero to your annual budget, what a difference that would make.

Amritha Jaishankar: That would make all the difference.

Rich Bendis: All the difference in the world. We just talk about zero budgeting. There's a lot of young women that listen to *BioTalk*, and one of the things I want to talk about is that you've progressed very nicely with your career to what you're doing today in a leadership position, which is providing an extremely valuable service running a very important organization. But it didn't happen overnight. As you mentioned in your journey, you went through many different steps, you're on three different continents, you went through six different organizations or jobs when you're in the UK, and then you come to the United States, and you do NIH, and you're working universities. So what recommendations do you have for anybody, but especially young women who want to pursue the STEM education career path that you have taken, and what kind of recommendations can you give to them about looking towards the future and the vision that they should have?

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Amritha Jaishankar: I speak often to students at elementary schools, undergrad, grad, and I just spoke to some undergrad and grad students in India over the weekend as well. And quite honestly, my excitement and enthusiasm about this industry just seems to keep increasing. So I want to encourage more and more folks to get in. And I would say find what really excites you, and take a chance. Always be open to learning more. And sometimes you're uncomfortable, but that just means you're growing. And you've got to take a chance and find a way to make your voice heard. And find folks who support you on this journey.

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There are several of us who have done this and are looking to help others get into the space. And I know you are STEM in general, and like I said, I think I've been in this space since I was in 10th grade. So passion, hard work are obviously things you really have to have. I think it's really just have that drive, keep going

Rich Bendis: I think that cell and gene therapy, if you look at when you started, was not really a big industry, research or commercially. And if you look at where it is today, if people have an interest in getting into this area of

research, it's a lot easier today than it would have been for when you were in 10th grade or when you were going through academia because it really didn't exist at that time. So I guess one of the things there might be is more mentors that potentially are available, like yourself, who have been successful. How does a young person find a mentor, and how do they get the moxie to ask someone for advice to mentor them?

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And are you willing to talk to young people to help give them mentoring advice?

Amritha Jaishankar: Yeah, time is the only constraint, right? But yeah, I think that we're all willing. And as you said, there are much more opportunities. And people are exposed to all these different career path much earlier. And there are tons of opportunities. And so, I think this is something I've probably not done the best in my life, finding mentors as well. But I think it's critical, having people who advocate for you and are there to advise you on different things. And I've worked with some great people, and I think I've almost always used them as my mentors. But they're people I look up to and reach out to. So I think try it. The worst that can happen is that we're not able to reply because we don't have time.

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But I try always to get back when I do have a chance. I belong to a few different women groups as well in the space, too, so it's sort of more organized, and we're there helping folks when we can. So yeah, I think reach out to people, and just learn every day.

Rich Bendis: As Nike says, "Just do it," right?

Amritha Jaishankar: Just do it.

Rich Bendis: Just do it. As we're coming to a close with this edition of *BioTalk* with Amritha Jaishankar, who is the Executive Director, Maryland Stem Cell Research Fund, which is MSCRF, I'd be remiss not to say I think you're doing a fantastic job. And thank you for everything you're doing for the state of Maryland, the companies, and also the patients within Maryland. But is there anything that we didn't discuss today that you'd like to talk about in an open mic way for the listeners to hear?

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Amritha Jaishankar: No, I think we covered a lot of things. I just want to say thank you again for this opportunity to share what we do and for your support of our efforts. And thank you for everything you do for the BioHealth Capital Region. I look forward to interacting more as we build these ecosystems together.

Rich Bendis: Good. It takes a village, and we're just members of the village. Someday, we might be successful enough that I might get invited on your YouTube channel. So we'll see if we have a reciprocal agreement there, Amritha. Anyway, this has been very enjoyable. I've learned a lot that I didn't know about MSCRF. I'm sure our listeners did as well. So if anybody wants more information, what's the best way to contact you?

Amritha Jaishankar: My email, via LinkedIn, our website is MSCRF.org, which has most of the information also that I said about our funding opportunities, our awardees, and our contact information as well.

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Rich Bendis: Super. And we will certainly promote this when we release this issue of the podcast and also put it in our newsletter for people to be able to contact you. So thank you very much for, as we said, everything that you do and for appearing on *BioTalk* today.

Amritha Jaishankar: Great. Thank you so much for having me. I appreciate it.

Narrator: Thanks for listening to *BioTalk* with Rich Bendis.

End of recording