EP.107 – Darryll Pines FINAL

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. I'm your host for *BioTalk*. As you know, we interview leaders from the BioHealth Capital Region. We've been doing this for about five years, and always very interested in keeping up to date with what's going on at the University System of Maryland, especially in College Park. Today, we have a special guest, we have the President for the University of Maryland, College Park. I only say that, Dr. Pines, because we do interact with the other universities in the system. For those not familiar, we'll let them know that you're running the main campus up in College Park. We have Dr. Darryll Pines, President, University of Maryland. Dr. Pines, welcome to BioTalk.

Darryll Pines: Thank you Rich, thank you for having me.

0:01:00

Rich Bendis: It's a pleasure. It's taken us too long to get you here, but now that we got you, we're going to focus a little bit first on letting you introduce yourself to the listeners. I know it's a very interesting background, and a long history with the university. So, if you don't mind, please educate our listeners on your background.

Darryll Pines: Sure. Darryll Pines, currently the President of the University of Maryland, College Park. Been president now for 21 months. Started on July 1st, 2020, but I've been at the University of Maryland for 27 years. Actually, my anniversary was March 5th, 1994.

Rich Bendis: Well, happy anniversary.

Darryll Pines: Thank you, it just happened. My background is, I'm an engineer by training. I'm an aerospace engineer by training. I came to the university 27 years ago as an assistant professor, and came up all the way through the ranks to associate professor to full. Became the department chair in 2003.

0:01:59 Took a hiatus from the university to become a DARPA program manager for about three years, from 2003 to 2006. Which actually was very good for me, it was like my sabbatical, but really was a true leave of absence from the institution. I became a program manager on a

variety of exciting aerospace projects, which were very useful for me to get the understanding of the Department of Defense and other elements of our government, in terms of agencies. Then I came back to actually serve as department chair in 2006 to 2009. Then became the Dean of the A. James Clark School of Engineering for 11 years, prior to becoming president on July 1 of 2020. That's a real quick history of my sort of lineage at this institution. I love the institution. I think we have great programs, great students, great people. Our goal is to take it to the next level.

Rich Bendis: Congratulations on moving up through the ranks, and hopefully they'll be a long-term relationship there as your presidency at the university.

0:03:00 Since I've been involved with forming BHI about 11 years ago, and I've interacted and gone to College Park many times over that last 11 years, it's changed dramatically. There's a lot going on there that a lot of people might not know about. You've got the park that's going on, you have some new institutions that are going on around there and some new development, but before we talk about all that growth, let's give some background on the basic demographics of the university. Student-wise, emphasis, primary majors, and how you compete on a national and international basis there with the university, Dr. Pines.

Darryll Pines: Sure. Obviously we are a land-grant flagship research-1 institution, that is also part of the American Association of Universities for the highest research caliber. We're a comprehensive school, university, with 12 schools and colleges.

0:04:02 From the STEM side of the campus to the arts and humanities to social sciences to education to business to public health. We have about 31,000 undergraduate students, and we have about an additional 10,000 to 11,000 graduate students. So about roughly 41,000 total students and a 10,000 employee base, of which 4,600 are either professional track faculty or tenure or tenured faculty at our campus.

I would like to say, our strengths are a variety. Being a comprehensive university, we're very, very strong in the arts. We're very, very strong in the STEM areas. We are emerging in areas like public health, and we are emerging in public policy, as well as we are just recently constructed a new building of public policy. People know us from some of the more exciting areas that are currently hot today, such as

quantum science, such as earth and climate science, such as artificial intelligence and machine learning, and energy.

0:05:07 These are areas that—and of course on the bio side, all across the spectrum, from biological sciences to drug discovery and drug therapeutics to biomedical devices. We're very much well-known in these topical areas and they're strategic for us in terms of how we relate to the larger life sciences and biosciences ecosystem throughout our wonderful state.

Rich Bendis: That's very comprehensive, and I know you best because we're in the biohealth area, and that's really bio and technology. We came up with the name about 11 years ago, because of the convergence of what is happening really in health care, biotechnology, pharmaceuticals, and technology, and you mentioned some of those areas where it's very prominent now. AI, machine learning, and quantum, where those are all being integrated together. Your institution reflects basically what we think is our whole BioHealth Capital Region, because you have some of those disciplines that are very important to the companies and the government within our region.

0:06:11

Darryll Pines: Yes. Fortunately for us, we started with a strong emphasis in the physical sciences ages ago. That allowed us to evolve into partnerships that, at the time, were based strictly on science. We had a partnership with NIST, which is also in our state, on measurement science, with the full side being on quantum science as an enabler for measurement science. This was struck more than 20 years ago. It led to something we call the Joint Quantum Institute. I don't think even at that time could we have predicated, Rich, that quantum would evolve to be one of the emerging industries that our state has the potential to be a leader in. Because, fortunately, this collaboration with NIST has led to a number of really important discoveries that affect the life sciences now.

0:07:05 For example, we've been very fortunate that some technology that's come out of our laboratories has helped to start the first pure-play publicly traded firm on the New York Stock Exchange, called IonQ, which is a quantum-computing firm. But, most important about the quantum-computing firm, is maybe not just the fact that it's the first pure-play publicly traded firm on the New York Stock Exchange, but what that computing capacity could do for future discoveries. For

example, instead of using a high-performance computer, using a quantum computer, which is more scalable, faster, and can carry more computations, you might be able to discover new gene therapies, maybe new drug discoveries using structural biology, new battery chemistry and science faster.

We are super excited about the potential for what quantum enables for the life sciences and for the bioscience industry, because now when you couple that with like the other technology which is artificial intelligence, now you have quantum AI. Now we can do data-driven solutions that are run on a quantum computer, that leverages artificial intelligence algorithms.

0:08:14 What could that lead to? Potential expansion and development of new discoveries, and new things from the data and evidence that leads to new solutions for the biomedical community. That is what, I think, the University of Maryland brings in potential to an evolving industry that started with quantum science.

Rich Bendis: I guess what we should focus on is, quantum is ours to loose. Because we have some leadership here in this, and then there's a lot of technological areas in the past where America was first, but it's all migrated to other parts of the world. And I guess, as I've been following quantum, we have a little bit of Chicago, San Francisco, a little Boston, that we have to compete with.

0:08:58 But from talking to everybody, and a lot of people don't know this—and really, people focus on computer sciences—people don't understand, and I didn't understand, the amount of computer science emphasis and students and grad students that you have in computer sciences there. Which really rivals anybody in the United States. Isn't that true, Dr. Pines?

Darryll Pines: Absolutely, Rich. We actually have, coincidentally, the largest computer science department at a public institution in the country. We actually graduate more graduates than any other institution with a BS degree in computer science. I believe to date, we now have, I think it's over 6,000 enrolled students in one department. In one department, of computer science, and they're highly sought after. These students get jobs, obviously on the west coast, but everywhere in the nation. They get really, really great salaries. We're very fortunate to have a high-quality computer science department. A high-

quality engineering school, coupled with an excellent physics department and the aligning research areas in the area of quantum.

0:10:07 We're actually able to invest in our own faculty, in our own infrastructure, that allows this whole model to evolve in terms of quantum biology, quantum life sciences, quantum artificial intelligence. We just launched last fall something we call the National Quantum Lab. Essentially, we did a partnership with IonQ, this pure-play publicly traded computing firm, so that we would now help develop new tools, new modelling tools, and allow our faculty, our students, and partners, to run their algorithms on this commercial quantum computers. That's really to advance further science and discovery. We call it the National Q-Lab in partnership with IonQ. We've made a 300 million dollar investment in infrastructure and people, to help continue to feel that we, the DMV region, becomes the capital of quantum.

0:11:04 We've partnered with a Connected DMV group on a couple of proposals through the Potomac Quantum Innovation Center, to help broaden the economic footprint and ecosystem related to all things quantum. Because there's going to be advances in quantum computing, quantum networks, quantum communication, quantum devices for the biomedical community. There are a number of emerging devices that are already in the works. Some have led to startups both here and throughout the United States, that are purely focused on the biomedical applications. We want the State of Maryland and the region to be one of the leaders in developing the next solutions to human health.

Rich Bendis: That's very hard for people to compete with all of the assets you've just mentioned there, so I guess it is ours to loose, and I guess at BioHealth Innovation we'll do anything we can to help support you, so that we don't lose that leadership.

0:12:00 We've been actively involved with Connected DMV and the Global Pandemic Prevention and Biodefense Center. If you look at that related to your National Q-Lab and everything else you're doing at quantum, there's a natural synergy for us to work together once we get all of our leaders publicly, and the industry, to understand how we have this nucleus to build upon. So, congratulations on where you're positioned today. Let's just keep it, right?

By the way, when you talk about your computer science department, and this is just a little sidebar, we're utilizing two teams now, capstone teams, to work with BHI. One of them is going to be helping us in updating our website. The other one's going to help us with our database management tool. We're getting exposed to about 12, 14 students on a weekly basis, interacting with them, and we're very excited that they're going to help us repackage BioHealth Innovation in the future.

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Darryll Pines: That just brings a smile to my face, to know that you've already tapped into this talent that's going to help you. I think that's wonderful, and hopefully you'll have a great website, help you maybe even do some additional analytics, to help do some data-mining for you guys. I think it's exciting to leverage our whole ecosystem of both students and other partners, to help develop new tools and be successful for our community and for our industry.

Rich Bendis: I think that's one of the benefits of this podcast, is we can make other people aware that there are these kind of resources that exist at the University of Maryland. It's just that they're not as widely known, but I think they're trying to be a little more proactive in the marketing of those tools. We'll help spread the word once we get our new site and say, created by University of Maryland students.

Darryll Pines: Excellent, excellent.

Rich Bendis: Let's go on past the quantum, even though it's one of the most exciting things to talk about. Let's talk about some of the other things that are going on within the College Park area. You have some discovery districts, some new developments, this whole revitalization is going on around you, around the campus. Talk a little bit about what some of the major, new innovations are, that are going on around the campus.

0:14:05

Darryll Pines: Well, you know it's only natural as we grow as an institution of higher learning, we always continue to grow and expand and evolve around our location. What we've been trying to do is build out an innovation ecosystem, and also an environment of residential and retail that essentially will bring people as a place of opportunity to the region. Both those who might want to bring their businesses here, those who

might want to live here, and those who might want to collaborate with us on research and other areas. We've been working on a plan, which we call the Greater College Park Plan, to help reimagine, revitalize, the entire region. Which includes what you previously knew as Route 1, or we call it, Baltimore Avenue, as well as extending Campus Drive into a region we call the Discovery District, which is about 150 to 200 acres of land that we own.

0:15:05 Where we can help bring other businesses here, allow for residential and retail to grow around our environment that makes it a very vibrant location. That's what our goal is. Again, we call it the Greater College Park, as a result of a cooperative agreement between Prince George's County, the state, private developers, and the university. This effort links academic buildings as well as public-private partnerships in the hub of a vibrant downtown College Park community.

What we've been working on as an example, one of our ongoing and future College Park is a recent unveiling of the new city of College Park City Hall. Which, believe it or not, is a partnership that's shared between the city and the university. So we have offices in the building, they have offices and council meetings in the building. I think it's the first of its kind, where the university and the city have collaborated to create a joint City of College Park City Hall.

0:15:58 We are also having some tremendous growth going on in our Discovery District. I just want to share a few highlights, if you don't mind. For instance, we have a Veterans Business Operation Center there, which works with our local veterans in the community, plus those who are our students at our campus, to help them launch their own businesses going forward. We're the only one in the State of Maryland, and very few in the United States, to have such a center. For example, one interesting startup in our Discovery District is Capitol Percussion, which turns out to be a business owned by an artist-in-residence who is actually the principal timpanist for the National Symphony Orchestra. He occupies space in our Discovery District.

Another biomedical example is Medcura, which developed a coagulant to help stop bleeding in people using a particular type of chemistry. They're also in our Discovery District, and they're doing very well. In addition, we tend to have new student housing, for our graduate students, that's affordable, that will also be in our Discovery District

that will allow more research to be done and more grad students to collaborate and get their PhDs and Master's here.

0:17:04 It's a comprehensive plan to help develop an innovation ecosystem, an economic development ecosystem, and a place setting where it wants people to come to College Park or Greater College Park, and work closely with the university to help advance the mission of the state and the people of this wonderful state.

Rich Bendis: It's almost like a mini-Silicon Valley going on around College Park.

Darryll Pines: Better not to say that, try not to use the words—because it's impossible to be Silicon Valley, of course.

Rich Bendis: Sure.

Darryll Pines: I like us to be very simplistic about—we're focused on what works for Maryland. We do believe, I do use this term every now and then, that we could become the capital of quantum. That we intend to do right by the citizens of the State of Maryland and grow economic opportunities for all citizens of the state and Prince George's County, to help achieve the mission of the state, and grow the space.

Rich Bendis: Well, start small and grow big, right?

Darryll Pines: Right.

0:18:00

Rich Bendis: When you talk about your innovation ecosystem, and I'm going to move that a little bit, is that, you've had some pretty interesting inventions come out of College Park. One of those was related to the Fischell Institute, if I'm not mistaken. Talk a little bit about some of those great innovations, other than IonQ and quantum, that also have come out of University of Maryland.

Darryll Pines: Even that startup I spoke about with the coagulant, sort of blood coagulant, is Medcura came out of our research, out of our chemical engineering department and our biomedical, bioengineering department. So that was exciting as a startup. But, at first, I have to say, it started with a gentleman, that you probably know really well, Dr. Robert E. Fischell, who had a vision, probably about 15 years, that we could really become the center of innovations in the biomedical and bioengineering field. Now, of course, as you know, Dr. Fischell, in his own right, launched an incredible invention on stents. His firm and

his family developed this incredible stent that is used all around the world.

0:19:06 But Dr. Fischell also had this vision that this bioengineering department, and then the subsequent Robert E. Fischell Biomedical Device Institute, could be a leading entity solving health solutions for human health. That's what he started. His family gave a transformative gift to the university that helped launch the state to make a matching commitment to first, start the department, start the institute, and to get a building built that would house the institute and the department.

Now, this entity, which has now been around for about four or five years, pre-COVID, is now developing all kinds of innovations, developing patentable innovations for COVID solutions, which is really exciting. But also is working with Children's National Medical Center in Washington, to work on pediatric biomedical devices that help impact the lives of children. That's probably the most exciting work that they've been doing. But again, many, many inventions are coming out of this new institute created by Dr. Fischell and his family.

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Rich Bendis: I think that's fantastic. And a partnership we're very lucky to have, Children's, and what they're trying to build on their innovation campus in our region as well. Dr. Kurt Newman is on our board of BioHealth Innovation, so we've got a chance to look first-hand at some of the innovation coming out of there, and his vision for making this region one of the leaders in pediatric medical devices in the world. I think University of Maryland is critical to that partnership and that equation, so congratulations on that.

In addition to some of the exciting things we've talked about, I also understand that you have something you call grand challenges at the university. I don't know much about that area. Maybe you could enlighten our listeners, and I'm talking to Dr. Darryll Pines, who's the President of the University of Maryland, about what the grand challenges are for the University of Maryland.

0:21:03

Darryll Pines: Yeah, Rich, I think you actually do know a lot about this, because you've experienced it. What happened to all of us in 2020 was sort of like a seminal moment in the existence of the human race on the

planet. We obviously had the virus, which never before, in your lifetime, in my lifetime, had something had an impact on the entire human population of the planet. In this case, the coronavirus and COVID-19. In addition to that, we had the Black Lives Matter movement and social unrest and racial injustice in the summer of 2020. Finally, in the fall of 2020, we had the huge uncertainty in our election process and then picking a new president and how one vote matters. What a year 2020 was, but it was a point of also reflection. It caused us at College Park to think about what was really important for us to work on going forward.

0:22:03 Then we decided, based upon that point of reflection and inflection point in our history of the human race, is that we would work on the grand challenges of our time. That is, we would work on climate change. We would work on clean energy. We would work on social justice issues. We would work on human migration and refugees, improving the refugee situation. We would work on the grand challenges that are facing society today and for the future. Including what's happening with the invasion into Ukraine. That caused us to develop a strategic plan, and then one of the elements or pillars of that strategic plan is that we will work on the grand challenges to positively impact the lives of people. That is what we are working on. Even in my own class, I created a class called The Grand Challenges of our Time.

0:23:00 This was my third year facilitating this course. In my previous two years, to ensure that the entire campus community had an opportunity to engage in thoughtful conversations, we held forums with incredible individuals who have contributed in their very own way to solving some grand challenges that have impacted either a hundred-thousand people, or maybe even a million people.

Let me just share with you a few of the people that I got to come to my class. I got the brother of George Floyd, Philonise Floyd, to be a speaker in my class. Here's a man who essentially was a truck-driver, and all of a sudden his life is thrown into an uproar, because of the unfortunate murder of his brother. He now has become an activist for criminal justice reform. He's spoken in front of Congress, and now he's going state by state to get legislation approved to improve the rights of citizens and victims through the criminal justice reform legislation that he's seeking.

0:24:01 A lady like by the name of, you've probably never heard of them, Catherine Coleman Flowers, who is a MacArthur Fellow and is an environmental activist. She discovered that in rural America, with septic tanks, that one of the climate change, because water is rising in the soil, is pushing these septic tanks off their moorings, and causing, unfortunately, citizens in those rural domains to be infected, and to have disease. These grand challenges can be solved, and we want to work on them as a university. That's kind of what I focused on.

Rich Bendis: It's nice to hear that you're still in the classroom too, because there's no better way to connect with the students as the president as to get exposed to them on a regular basis in the classroom.

Darryll Pines: Absolutely. It's been fun. It's fun to see students. It just keeps you close to how they see the world, especially during this very difficult time. You and I never had to go through something as students as what these students are going through. It's really important for me to stay connected, and I really love giving this class every fall.

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Rich Bendis: Well, thank you for doing that and keep doing it, because I think it's important. You did touch a little bit on George Floyd, but I also know that the university has put an emphasis on DEI, diversity, equity, and inclusion. Talk a little bit about what you see for the future direction around DEI at the university.

Darryll Pines: When I first became president, I told the community that I had two high priorities. One is that we be excellent in everything that we did, whether it was in the arts, innovation, in the academics, or in athletics. The second priority, though, was that we would create a more inclusive, multicultural community where every person would feel that they can really reach their full potential. In doing that, the first thing I wanted to do was just send that message as a leader. The second thing I wanted to do, was to really announce a series of programs that would move us to a better plateau as it relates to diversity, equity, and inclusion. I'm just going to share two of them with you.

0:26:00 One of them was an onboarding program. One day I was visiting Northrop Grumman up near the airport, BWI Airport. There's a large center there. I was in the line, and I saw all these people in line, and I said, "what are you in line for?" They said, "we're in line for the Northrop Grumman onboarding. We're new employees, we just came to Northrop Grumman." There was like a hundred people on line. I

actually followed them into this conference room and sat down and said, I wonder what they do?

What they did was, they indoctrinated everyone to Northrop Grumman's values, mission, traditions. I used that model, and I created something called the TerrapinSTRONG program for our university. Where every employee, every student, and every staff member and faculty member, would get indoctrinated to what does it mean to be a University of Maryland citizen. What does it mean to know our values, our history, the traditions? How do we respect one another? We had never done that before and now we've had 15,000 people go through our program.

0:26:58 What that's trying to do is normalize them to what our expectation on how we treat one another, with respect. The diversity of our community has all kinds of parts to it. If we leverage that diversity, we can be greater going forward. So I started with that. Then, I went into a program in curriculum, to help improve the ability to talk about very complex subjects, like racism, religion, other topics. So that students would have these sensitive conversations, and so would faculty and staff, so that they would understand one another a little bit better, and that we would reach a better plateau.

Then finally, some concrete programs about changing the numbers at our institution. We created a diversity faculty program, to hire more diverse faculty of tenured background at our institution, because we feel like we're at a smaller number than we could be at, a much higher number, to really reflect and represent the students, the diversity, that we're serving. I felt that that is now going well and we intend to hire about a hundred-plus faculty members of diverse backgrounds across the entire institution. So we're very much committed to DEI. We believe DEI is synonymous with excellence and innovation. When you cultivate it properly, great things happen.

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Rich Bendis: Well, again, congrats on taking the lead on that. As a small nonprofit organization, BioHealth Innovation, we're working on our long-term plan right now, and we need to integrate DEI more into it. I don't know what you can share, but if you have anything that you could publicly share with me, I'd like to see how you built your values into what you're doing at the university, because there might be some common things we might be able to help build into our planning

process. There's no sense reinventing the wheel, when there's very smart people that have actually taken the lead on some of these initiatives.

Darryll Pines: I would be happy to share anything. TerrapinSTRONG program, I think we've really been able to infuse that systematically throughout the entire enterprise, at every level. It started with just an idea, and then it started with working groups at every level. Those working groups came up with definitive modules that they could use for their community to help educate them.

0:29:05 Similarly, that led to, following upon that, led to our strategic plan, which we just completed and announced about a month ago. Inside of that, it embraces diversity, equity, and inclusion, and holds it up as a pillar for what we value. Now, when we start launching initiatives, which we will do very soon, everybody will know where it came from and where the framework has been established, so that we're all on the same page. We believe that this will help us become a better institution, and reflect the values that we all uphold and lead us to even further excellence in the future.

Rich Bendis: I'd love to get access to that, that you're willing to share. This will be a follow-up after this podcast. One of the greatest benefits for us to interact today. Something that I will learn through this podcast, Dr. Pines. A couple of other areas that I'll touch on briefly with you. You kept talking about the arts. When we talk about innovation, we tend to focus on technology or biotech or other areas, but you have something called Arts for All. Talk a little bit about what the program means within the university setting.

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Darryll Pines: First of all, it's important that we all understand that the humanities and the arts are really what hold us all together. I may talk very affinitively about STEM and technology and bio-hub and biosciences, and of course that allows us to reach new plateaus for human health and solutions. But what really keeps the fabric of our community together, as a people, are the arts and humanities. Even in 2020, if you remember some of the most symbolic moments were some of the murals painted of George Floyd that kind of connected people. Just that humanist part of us really helps us understand one another, helps us share in the things that we're all facing.

0:30:58 So last September, I wanted to really reemphasize that we are a comprehensive university. I officially launched this concept of the Arts for All in partnership with my colleague, the Dean of Arts and Humanities, Dr. Bonnie Thornton Dill. It was initially to seek to humanize the world's grand challenges. Not just think about them as solutions to the grand challenges and problems, but to humanize them and connect the grand challenges to the arts and have a conversation with the sciences, of how it could enrich all of us. Not by just thinking of the solutions that are in the technology side, but what are the humanistic solutions that also are needed to help us get through these solutions.

So, created this initiative. We're now doing that by expanding arts programming across the entire campus. Including an Academy for Immersive Arts and Performance, new majors and certificates, new courses that sync computer science with the arts, pop-up musical performances in various campus spaces, and a scaled-up festival we call NextNOW Festival, which integrates the arts, technology, and social justice issues. We're super excited about that.

0:32:08 What's even more exciting is that, much of what we are doing are first in the nation. For example, a new joint major from the Department of Art and the Department of Computer Science, that teaches students to use technologies, like virtual and augmented reality, computer graphics, coding for new ways of displaying art virtually, and then some. We're very excited about this new initiative, which has been absorbed by our campus pretty positively. We've already done a couple of really incredible displays of showing how art and technology can be used to really visualize and immerse oneself into something that they didn't think they could do. It's pretty exciting.

Rich Bendis: It sounds like you're trying to break down some of the traditional academic silos that exist. That's what a lot of people's external observations are of academia is, that you have the dean fiefdoms and, generally, they want to protect what they have and they're not interested in trying to partner with other people within the academic setting.

0:33:06 It's foolish not to take advantage of the strengths and get that interaction between the strengths, between those departments, where you end up with something better by them talking to one another.

Darryll Pines: Absolutely. I feel like even in the—that's true among academic colleges, but it's also true in the biosciences, right? You need medical clinicians, medical researchers, linked with biologists, linked with engineers, linked with computer scientists, to really bring these disciplines, disparate disciplines at some sense, together to really come at the interface, to solve these more complex problems, that are actually interdisciplinary. Then to train the next workforce, generation, to be already interdisciplinary thinkers, so they can see it through a different prism than maybe you and I, who grew up more in our disciplines. It's exciting to see that, because always somebody from outside your discipline always has a different perspective of looking at the problem.

0:34:00 We see that the same way with the arts, is that when you bring these disparate groups together, and sciences and technology with the arts, you see a lot of innovative ideas, different ways of looking at things, different ways of presenting them in performances. And so this is an exciting time period, and I think everybody has embraced our strengths. Our strengths in the arts, our strengths in science and computer science and technology, and now let's bring them all together with an overarching theme towards social justice.

Rich Bendis: You mentioned workforce and getting better, more well-rounded students basically by that exposure you're giving to them, of the different disciplines. That's one of the challenges we have in our region, in the BioHealth Capital Region or DMV, whatever you want to call it, is that, there is a little disconnect, and it has been there forever, between academia and industry. Industry who needs qualified, intelligent workforce. You're educating them there, but there's still a disconnect in trying to get industry and academia working more effectively together. What are your observations and recommendations on how we can encourage more of that to happen, Dr. Pines?

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Darryll Pines: I think you're right, Rich. In the past there's been sort of a division where we train academically folks with a theory and background, that we think are critical thinking skills that allow them to transition into industry seamlessly. For many years that has worked very well. I think more recently, we realized that industry is changing really rapidly. And we must be in lockstep with our colleagues in industry and

government, so that we can develop the necessary skills that are applicable in today's moving market.

So what we've been working on, there's something called the Greater Washington Partnership, I'm sure you've heard of it. This partnership was started before I became president. I came in to this partnership which includes government, industry, and academia, and what I've discovered from being in this partnership is that in the DMV region there's like a 40,000 person deficit in the workforce in a variety of areas.

0:36:09 Of course, in computing, but also in lab sciences, also in cybersecurity, also in data sciences. So what this group has been doing is, instead of doing things in more of a traditional academic discipline silos, we've been working together to develop credentials and structures that essentially allow individuals to develop those key knowledge skills, so that they can get a set of credentials and a certificate to be ready to go into cybersecurity, ready to go into date sciences, ready to go into artificial intelligence. The hope is that these certificate kind of credentialed programs across a multitude of universities, in partnership with our colleagues in industry and government, that we are rapidly turning around individuals that can seamlessly transition into the workforce.

0:37:00 Whether that be working for Amazon or Northrop Grumman or Lockheed Martin or for one of the large pharmaceuticals or life sciences firms in our state. I think this is actually really working, and that these programs will start to roll out fairly soon. You'll see people getting trained across two-year and four-year institutions, with the right kinds of skills to actually seamlessly move into industry. Industry will be pretty happy as we'll be able to grow that footprint of the workforce.

Rich Bendis: I think the certificate program you're talking about is something that's badly needed. Because, I interviewed all of my board members in December, as we're getting ready for our planning process, just to see what are their priorities for the future. It's amazing how many of them talked about workforce as one of the biggest problems. Is that, we're number four with the BioHealth Capital Region as we rank against the other BioHealth Capitals, Boston, San Francisco, New York are ahead of us. One of the things holding us back is number of workers, skilled workers, in the biohealth industry in this area, and that's preventing some people to relocate here.

0:38:06 We have all of the PhD people that you need to have, because we're basically one of the most educated regions in the world, based on where we're at. But, it's the entry level and middle level employees that they need for manufacturing, distribution, sales and marketing, and really data analytics and those types of areas, where we have that deficiency we need to strengthen in the future. So, happy to hear you talking about these things. Because I know one company that's trying to hire 15 new data analysts monthly, right in Rockville, and they didn't know where to turn.

Then the other thing, and you probably have heard, is that we have the Amazon phenomenon, and COVID and pandemic have created that. It's not that they want these skills, but the workers now are dictating when they want to work, where they want to work, how they want to work. Workforce is got to be one of the greatest challenges we have for everybody within our region, right now, and in the country.

0:39:06

Darryll Pines: Yeah, I couldn't agree more with you, Rich. It's interesting, I think if you and I were having this conversation pre-COVID, I don't think we could have imagined that the execution—or the fact that the workforce can be displaced as it is now, in remote locations, and still do their job in the life sciences, in cloud computing, in any topic, and still be able to be effective.

So now we have a situation where—still it's better to be together in a work environment, thank god COVID has gone down, where we can actually now really be seamlessly integrated a little bit more in our work environments. But we're still going to have these people who are going to want the option of working wherever they are. We, the academia, and also industry, will have to adapt, to train that workforce to be remote, have broadband and WIFI access, to be able to deliver content and excellence to their work environments.

0:40:00 We have partnered, in Montgomery County, with the Universities at Shady Grove, where now we are going to deliver a few more programs there that's going to help fuel that workforce that you're talking about. So more of the applied life sciences, rather than the theoretical side that we do here at the core campus in College Park. We're going to develop a degree program in bio-computation at Shady Grove. We already have a biomedical technologies degree that we're offering

there. We have an applied biological sciences degree that we're offering there.

All of that is in partnership with Shady Grove and Montgomery College, which becomes the feeder that allows great students from Montgomery College to come in, get an additional two years at Shady Grove, and go right into the life science and pharmaceutical industry. Immediately doing those jobs that really are in high demand. Which includes some of them in data sciences. I think, with our presence in Montgomery County at Shady Grove, and with our growing presence in Montgomery County there, I believe we're going to be able to help meet that gap that currently exists in the life science community in Montgomery County and the state.

0:41:05 It should happen over the next two to five years, I would say, and it should be pretty strong. Because we have a strong commitment to do that over the next several years.

Rich Bendis: Well, hurry up and get them some certificates and get them some graduates out of there, because I think industry's sitting there waiting for them. They'll take them immediately, Dr. Pines.

Darryll Pines: We're trying, we're trying.

Rich Bendis: I know. You probably have as much patience as I do. But at the end of the day, there's one last thing I want to talk about as we close this interesting podcast with you. Is that, you have another national designation, because you are an Innovation Corps, or I-Corps hub, with the National Science Foundation, which is a very great designation. Which is not bestowed on many academic institutions around the country. Do you want to talk a little bit about that I-Corps program?

Darryll Pines: Sure. The University of Maryland has been deeply involved in the I-Corps, since its inception. Since the very earliest day. We were one of the first I-Corps hubs or nodes, when they first started the program.

0:42:02 The idea is that we educate faculty, staff, and students, about the ecosystem of innovation. How do you go from the benchtop to marketing your idea to developing a product to actual revenue generating businesses. The I-Corps program, which was started off by the National Science Foundation, was to educate scientists to become better at translation. We, being a hub, we have done this for the University of Maryland, but we've actually done it in partnership with John Hopkins, with George Mason, and with Virginia Tech, and in the

District of Columbia as well. So now, we have taken that to a whole another level. We are now a regional node for the midatlantic region, with now many more university partners. We've also created sister programs at some of the federal agencies, like NIH and the Department of Energy and the Navy.

0:43:02 So now, it's educating naval scientists, NIH scientists, about the same translational model. The program provides real world training on how to incorporate innovations into successful products that will help solve a variety of societal problems. Through immersive learning experience, researchers can better understand the market value of an innovation, which they hadn't really done before. The university has ranked in the top 10 for innovation and entrepreneurship—our university, because of this program, has ranked in the top 10 in entrepreneurship ranking systems for the last seven years. And really we've helped take ideas from the benchtop or the bedside, to market.

It's a very exciting program. We intend to grow the base in our region. Of course, we'll grow it in the life sciences and, of course, in areas like quantum and cloud computing and artificial intelligence and machine learning. So, super excited about this I-Corps program. It's been a wonderful program from the NSF that we've been a part of since the inception.

0:43:58

Rich Bendis: That's great, I love you talking about top 10, because the other thing that a lot of people don't know is that when you combine all of the research institutions within the University System of Maryland now, you are a top 10, tier 1, academic setting in the United States. I think that's the way other people have been counting in the past, and it just took a while for Maryland to start counting with some of your competition out there.

Darryll Pines: That's correct. We decided, we were counting individually, but when we put ourselves in partnership with UMB, the University of Maryland-Baltimore, all the professional schools, we realized that as a collective research enterprise, we were in the top 10 and didn't even know it. Finally, we got approval under one research vice-president, our enterprises can be really projected in the right way that they should be. Not only that, the most important part is the collaboration that it's built. So now through what we call the empowered relationship, we have all kinds of strategic partnerships with University

of Maryland-Baltimore, whether it be in medicine or dentistry, or in social work or the law.

0:45:02 It's super exciting, because now we're going after super big initiatives together. Just as a highlight, we're trying to get one of the Chan Zuckerberg bio-hubs. I'm just going to put that out there. We're going after it very seriously, and hopefully we can be successful. I don't want to say what the topic is, but we hope to put one in. That's because of the partnership and the collaboration as a tier 1 research institution that we think we can achieve these high goals.

Rich Bendis: Well, if you need another partner on that, we'd be glad to partner with you on that Chan Zuckerberg thing. We're aware of it, we didn't know how many people within this region were going to try and go after it. What we need to do is, take the strongest people, align them together, so we have a better chance. They definitely need something on the east coast. It might as well be in the DMV, rather than some other area up and down the east coast for them, for sure.

Darryll Pines: Totally agree.

Rich Bendis: Let's close this, and give you an opportunity, is there anything that we haven't discussed you'd like to tell our listeners about, Dr. Pines? We're talking to Dr. Darryll Pines, President, University of Maryland. Is there anything we've left out?

0:46:06

Darryll Pines: No, but just glad to be a partner in the life sciences and the biosciences. I think it's one of the core strengths of our state, that we should never lose sight of, and that we should always be trying to find ways to advance that mission, as well as the jobs that are created from that mission. I'm excited that the University of Maryland can be just one of many members of the community, providing value and success for our community.

Rich Bendis: Thank you very much, you're an integral part and a leader within the community in many different ways. We've had the opportunity for the last 45 minutes or so, to talk to Dr. Darryll Pines, President of the University of Maryland. There's so many things we have to follow-up again on, that we're not going to wait 21 months to do a little follow-up podcast with you, Dr. Pines, if you don't mind.

Darryll Pines: Well, thank you for the opportunity to be here. Thank you for the work that you do, Rich, to help promote biosciences and the bio-hub in our incredible state and in the region.

0:47:03 Let's hope that we can get better and move up the rankings, of the top 5, right?

Rich Bendis: We want to be number 3, for sure.

Darryll Pines: That's right, you got to go up one more. So very grateful for the opportunity and the work that you do to help expose our community to what goes on here in the State of Maryland.

Rich Bendis: Thank you very much. I look forward to working together with you.

Darryll Pines: Alright. Take care now.

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

End of recording