EP.83 - Dr. Pan and Phil Robilotto 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, welcome to another edition of *BioTalk*. I'm your host, Rich Bendis, and as you noticed, we've been doing more than one person on some of the *BioTalk*s recently, and we're going to do that again today because we have a very stimulating topic we're going to talk about, and that's really related to how faculty gets science out of the laboratory and potentially into the commercial markets. And I can't think of two people better to have on the podcast today than our two guests. One is Dr. Pan, who holds a dual appointment at the University Maryland Baltimore, UMB, and the University of Maryland Baltimore County, UMBC.

0:0:01 And Dr. Pan is a professor in radiology and chemical, biomedical, and environmental engineering at UMBC, and a professor of diagnostic radiology, and nuclear medicine, and pediatrics at the University School of Medicine, so he's got a dual appointment, which is very important. It's interesting to see how it works from an engineering and a medicine background. Dr. Pan, welcome to *BioTalk*.

Dipanjan Pan: Thank you. Thank you for having me here.

Rich Bendis: You're welcome. And then, somebody with a much shorter title than Dr. Pan is Phil Robilotto, who is the director of UM Ventures, which we're going to learn a lot more about, at UMB. Phil, welcome to *BioTalk*.

Phil Robilotto: Thanks, Rich. It's good to be here. It's great to see you again.

Rich Bendis: Yeah, it's great to see you. It's been a year probably since we've had a chance to look personally at each other in the eye.

Phil Robilotto: Yes, it has.

Rich Bendis: Even our BioForum in October was virtual. So we didn't get a chance to see each other personally.

Phil Robilotto: Yeah, it's been a while.

Rich Bendis: Yeah, I know, it's been a while.

0:02:00 But we're going to try to correct that with this little *BioTalk* podcast to get caught up with one another today. And we're going to start first, if you don't mind, Phil, because you really wouldn't have had anything to transfer unless Dr. Pan had created something.

Phil Robilotto: That is correct.

Rich Bendis: Yeah, so we're going to go back to Dr. Pan. And why don't you give us a little bit of your background, Dr. Pan? Talk a little bit about education, how you got into science and the research area, and what got you interested in potentially developing something that might have some commercial applicability.

Dipanjan Pan: So I'm currently a full professor with dual appointment between medicine at UMB and engineering at UMBC. My background is really in chemistry, material science, bioengineering, and I lead a multidisciplinary team of scientists working on developing next generation translatable technologies to improve human health. What we do is, really, we uniquely merge what I call molecule making, and that part comes from my strong chemistry background, and combine it with device making.

0:03:09 That part is really coming from my engineering training and background. And we do a lot of innovations in nanotechnology and try to solve biomedical problems. The goal here is, really, to discover something inside and then translate it to the bedside quickly through a very translatable and multidisciplinary approach.

Rich Bendis: I was just going to ask, what early in your life stimulated you to want to be a scientist and a researcher?

Dipanjan Pan: That is true, actually. I started as a chemist, pure synthetic organic chemist. And then, my first faculty appointment at Washington University in St. Louis School of Medicine, I think at that point, I started collaborating with a clinical scientist. And that kind of changed how I look at the science and look at innovation.

0:04:04 And, really, that was the main thing, that science should be done in a way that it can change people's lives. So being a pure basic scientist, and then I kind of made a jump, and now everything my lab does is translatable and translational.

Rich Bendis: Thank you, and we'll get into some of that translational science as we continue on the podcast here. But let's go back to Phil Robilotto. And, Phil, I think the listeners also would be interested in your background and how you evolved to what you're doing today.

Phil Robilotto: So I started my career originally in clinical medicine. But I went back to business school really early on. Originally, I was planning on going into healthcare finance. But when I was getting my MBA, I ran into some people from Dupont Pharmaceuticals, and I ended up going to work for them in their strategy group. It was a great experience. I didn't know much about drug development at the time. I learned a lot. Great people.

0:05:00 It was a great company. But unfortunately, it was sold pretty quickly after I was there, got bought by Bristol Myers Squibb. And I stayed with BMS for a little bit after the transition, but ended up coming down to Rockville, Maryland. I moved here in '02 or '03 to work for a company called Celera Genomics, which was, at that time, the Human Genome Project, it was a very cool company. They had a huge presence in Rockville, Maryland. And I spent nine years working for them doing business development, licensing, strategy, product planning. I worked all over the place. We had groups out in California, we had groups here in Rockville. Again, it was a great experience, and we got sold to Quest in 2011. And at that point in time, UMB, which I didn't know all that much about at the time, was looking for someone to head up their tech transfer group. And it's been almost ten years since I ended up coming to UMB. It'll be ten years this summer.

0:06:00

Rich Bendis: Well, glad you're still there, Phil. But it basically says that if you go to work with some company, be prepared to be sold someday.

Phil Robilotto: Well, I think that is true for most biotech companies. I don't think it's just me. I hope.

Rich Bendis: Well, we'll see if that happens with Dr. Pan. But, also, talking about coming to University of Maryland Baltimore, and then you got involved in the tech transfer office, but now there's another affiliation with UM Venture. So talk a little bit about and introduce the listeners to the tech transfer office and also UM Ventures and how they work together.

Phil Robilotto: When I originally came here, it was really to basically work in tech transfer. Kind of classic tech transfer. And that's morphed and expanded a bit to become what we call UM Ventures. UM Ventures is really just the commercialization arm for UMB. So we have three teams on our group with three main responsibilities. The first is for intellectual property protection and management. So we have three in-house patent attorneys.

0:07:01 We'll review 150 new invention disclosures every year. We'll probably get 100, 110, 120-plus new patents issued every year. So this is a big part of what we do at UM Ventures is protect intellectual property coming out of UMB. The second part, also pretty classic for tech transfer work, is the licensing. We negotiate and execute all commercial IP agreements for the campus. So all licenses, all options are done through our group. We might get to term sheet on 75 different opportunities in a given year and execute and close upwards of 50 deals in a given year. The third piece of what we do is a little broader, and we have a small ventures team that we've been able to build out over the last couple years. And their role is really to support late stage technology and our startups coming out of the university. There's been a big focus to help get more technologies out of the university and into startup companies.

0:08:04 Since I've started, like I said, close to ten years ago, there's been a big focus and emphasis on it. So our group, we've been able to kind of build out a support system. We've got lab space in the BioPark, we have physical space in the BioPark, so we can get our new companies a space to go to when they need to get out of their labs. We're doing the same thing for our medical device technologies. We've got a space right in the medical school. And we're ready to open that up. We just have to get back to campus. We'll do the same thing for the device companies. And our folks in the ventures group can act, to support those companies, as project managers, they can act as temporary management, we've done that for a handful of companies over the past couple years. And another big thing that we do is we make investments in our own companies. So we started this about maybe five or six years ago.

0:09:00 We've done 13 investments during that time period. They're all into UMB technology-driven companies. Fortunately, our first one was Harpoon. And that has given us the ability to make more investments, and like I

said, to kind of build out that lab space and provide more support. UM Ventures encompasses the classical tech transfer of licensing, IP protection, but also we have this added responsibility for supporting our startups and making investments as well.

Rich Bendis: Well thanks for that intro. And when I first came to Maryland, more or less in 2011, the Tech Transfer Office was a traditional tech transfer office. And the way it has progressed to what you just described to today is very sophisticated and almost functions like a venture capital firm, in essence, on a full-time basis, but also has the luxury of having the backstop of all of the university resources to help support you.

Phil Robilotto: Absolutely. It's been great. Like I said, we've had a tremendous amount of support from system, from the board of regents. And from my boss, who you know very well, Jim Hughes, this is something he's wanted to see happen, and he's been great in helping us sort of make this vision happen.

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Rich Bendis: And it's happening. And before I get back to Dr. Pan, before we get into his technology, at what time does your tech transfer office or UM Ventures get engaged with a faculty member, and do you approach them, or do they approach you? And then, we'll get into a little bit about specifically what happened with Dr. Pan's technology.

Phil Robilotto: It's a little different now, like you alluded to up front, because everybody's remote. So typically, we do a lot of outreach. We'll go to the schools and do little in-services as to who we are and what we do. But most folks that have worked with us before know who we are. So we connect with them as soon as there's a disclosure that comes in to us. They'll start working with our office, with our licensing officer. They're assigned a licensing officer and a patent attorney as soon as they disclose new IP. So that's typically how it works. Since we've been remote, we're doing a lot of this remotely, and it's working out OK.

0:11:02 It's always better to have some face-to-face, of course. But with Dr. Pan, he's a little unusual because he came in during COVID. I'll let him tell you the story, but we actually got introduced to him because of his dual appointee through KaloCyte, Elaine Haynes, maybe.

Rich Bendis: Oh OK.

Phil Robilotto: It's a little bit of a different story.

Rich Bendis: Well, now we're going to flip it back to Dr. Pan. And he mentioned KaloCyte. That's another St. Louis company that's moved to Baltimore, is that right?

Dipanjan Pan: That's correct, yes. I have, really, a very unique background. Right after my post-doc, I had an industry stint with GE Global Research. And then, when I returned to academia, my research started to focus more on translatable technologies. So far, I have started three startup companies from my lab for commercial applications. And KaloCyte is really one of them. And as a matter of fact, that's probably one of the reasons why I moved my lab from University of Illinois to Maryland, to one of the other cofounders, Dr. Allan Doctor.

0:12:03 He moved from Washington University in St. Louis, and I moved from UAUC, and we wanted to work together more closely and help KaloCyte grow. That's one of the reasons.

Rich Bendis: Was that the primary reason you ended up landing in Baltimore, do you think? Or what was it that attracted to the University of Maryland and Baltimore, as well as the med school?

Dipanjan Pan: The med school is a big factor. In my prior institution, I did not have a medical school. So getting access to clinical facilities and collaborators, I think that's key for doing translational science.

Rich Bendis: Excellent. So, now, we've been keeping our listeners on edge to talk about this technology, so why don't you introduce us to the science and the technology, and then we're going to talk about how it evolved to where it became translatable.

Dipanjan Pan: This is, again, unique that I have this unique appointment between UMB and UMBC. And because of this dual appointment, I think we can do this cross-disciplinary type research where an integrative and transformative approach can be taken, that the overarching goal here is really to move the basic science discoveries that might be happening at UMBC at the engineering campus to the UMB lab.

0:13:16 And then, putting into practice through the UMB lab. So, really, we have numerous exciting targeted resources that are applicable between these two institutions. And we're trying to address some of these translational barriers, I would say. That is really helping to translate the fundamental research into the healthcare discoveries. And this COVID-19 is really a great example of that thing. So COVID-19 biosensor. So if I step back into the current demand is really--and that's true for any country in the world--for a rapid and convenient large scale diagnosis for COVID-19 that can down regulate the spread of this virus.

0:14:02 So there are multiple factors that are preventing this down regulation and the spread by doing early diagnosis. So the key here is really three things. Rapid diagnosis, speed that you can get the results. And the question is whether we can get that result without any significant requirement for advanced instrumentation or preparation. And the third thing is whether you are going to need a skilled person to run those tests. And also, with enough specificity and accuracy. So we're really making great strides in terms of the COVID-19 detection, but some of the tests that are out there aren't really accurate enough. You might be hearing all about the antigen tests and the other tests that are out there that are producing false negative results. So in order to make these tests accurate, I thought that we needed a solution that would offer rapid results, that can conveniently be used, and we can detect the virus as early as the first day of the infection.

0:15:11 So with that kind of approach, with that kind of overall idea, what we try to do is hit all these clinical and med needs by applying a multidisciplinary approach. We combine material science, chemistry, biology, engineering. So I can try to explain it in this way, that all of us carry unique RNA. So does the virus in SARS-COV-2. So we're going after this RNA that is unique to the COVID-19 virus. So in the lab, computationally, we discovered a new molecule, antisense oligonucleotide, that can bind the virus RNA by a lock and key process with a high level of accuracy. And then, we will apply plasmonic nanoparticles.

0:16:01 These are nanoparticles made out of gold, so they can absorb light, and in a very specific manner based on their size. So once they change the size, they will absorb differently than its parent form. So when the RNA of the virus binds to the plasmonic nanoparticles, that leads to a change in the

color. And that allows us to visually observe this detection process. The process is very simple, highly scalable, and very effective in producing results in less than 30 minutes with high accuracy. So that was one of the first things that we developed in the lab. We tested it in many clinical samples. And at that point, my interaction with Phil's team started. And we disclosed the invention, and we were kind of seeking options, and his expertise and his guidance for translating the idea to the next level.

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Rich Bendis: And then, basically, as you were going through that process, I think most of that was internally funded, but you were also able to obtain some special grants just based on the timeliness and the need that they had in the United States for something related to more rapid COVID-19 and more accurate tests. So tell us a little bit about your interaction with NIH.

Dipanjan Pan: That is a very good question. So when the pandemic happened, scientists all over the world kind of rushed to develop diagnostic [0:17:37 access?], and then treatments, and vaccines for COVID-19. So NIH, as far as I know, they received more than $3 billion to date for important COVID-19 research. And that would cover tests, vaccines, treatment, and all the other things. So I think there were multiple solicitations coming at that time directed towards developing a COVID-19 diagnostic test.

0:18:03 And I applied. And I believe that my lab was one of the first and earliest to receive an NIH grant to support the development of point of care technology. And we received two of them. So one to support the plasmonic test, and the other one to support a close-related test, which we're also pursuing as a home-based COVID-19 diagnostic.

Rich Bendis: Well, congratulations on that, especially in that competitive environment.

Dipanjan Pan: Thank you.

Rich Bendis: Most people don't know that NIH has 27 institutes, and each one has a specialty that they focus on. And your grants came from the National Institute of Biomedical Imaging and Bioengineering. And that's where you got some of your emergency special interest grants, which were very timely. And it's nice to have NIH in our backyards, even though you had to compete with people all over the country.

0:19:00 It's nice to see some Maryland companies get rewarded based on the good research and science they're doing by the National Institute of Health, which is headquartered right in Maryland as well. So congratulations, Dr. Pan.

Dipanjan Pan: Thank you. And that's one of the reasons why I have Baltimore in my background.

Rich Bendis: Yes. Baltimore and Maryland, the home of FDA, CMS, NIH, Johns Hopkins, University of Maryland Baltimore, and the medical school. There's a lot of great assets in this region. So you made a smart decision in coming east to the Baltimore area. So let's talk a little bit more. Once you got Phil involved in the tech transfer office at UM Ventures, it was Phil's job, I would imagine, to look at potential partners or ways that there might be some commercial applicability for your sensor technology, which you had developed. So talk a little bit about that, Phil, and the interaction with Dr. Pan. After there was a disclosure that came to your office, what happened next?

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Phil Robilotto: Again, like we talked about, it was a little bit different because it came over to us a little later than it might typically come over to us because of his dual appointee. And he just described the technology, there was some press out there about it. He was, I think, already fielding calls on this. There was a tremendous amount of interest in it. So by the time we got it, we really needed to kind of hit the ground sprinting. He started working with Jeff Cornell [sp], one of our licensing officers, I would say, every day. And also Dustin Lee [sp], one of our patent attorneys, to make sure we were capturing the invention appropriately. And we had a lot of folks that were either reaching out to us or reaching out to Dipanjan directly with interest in the technology. And we were fortunate that we were able to find a really good partner that was extremely motivated and had the ability and access to capital to be able to kind of move this technology forward quickly.

Rich Bendis: And so, in the press release I read, it was really RNA Disease Diagnostics that you developed this relationship with.

0:21:06 So talk a little bit about how that evolved. How many different people you had to get in contact with, how it was narrowed down to this one. And I see that they got an exclusive license. So I'm sure that there's some benefit that will inure to both Dr. Pan and to the university, correct?

Phil Robilotto: Absolutely. So obviously, this is great technology. We all want to see it commercialized. It has great potential benefits for patients, clinicians, really, everybody. And like I said, there was a lot of interest from potential partners at the time when we first started putting this out there to find partners. The group that became RNA Disease Diagnostics, they had great connections, they had access to development funding. We felt that they were going to be able to move the technology forward very quickly. They put a company together to actually move this technology forward fast, and they were very motivated. They were able to commit in writing to milestones to us sort of faster than some of the other groups were willing to do.

0:22:04 And I think Dipanjan was starting to feel good about working with him as well and were able to close the deal. And they were sort of still in stealth mode, I would say. There was a release put out. But I think we're all very pleased with what they've been doing since licensing the technology in terms of moving things forward.

Rich Bendis: Well, they're not going to be in stealth mode after our podcast today, Phil.

Phil Robilotto: Well, modified stealth.

Rich Bendis: Or Dr. Pan.

Phil Robilotto: They do have one press release out.

Rich Bendis: Yeah, right. I just want to revert back a little bit, Dr. Pan, to the NIH and NIBIB responsibility there, or the relationship. One of the things, and I'm sure it's important for Phil from a licensing perspective, is if you're receiving government grants, how does that impact the intellectual property if you use that money to progress that science and technology? And I think the listeners, a lot of them who might be scientists, researchers out there who haven't done that before, might be interested in that interaction when you have multiple parties involved in helping fund a technology to get to that commercial stage.

0:23:7 So I turn it over to both of you if either one of you would like to discuss that a little bit.

Phil Robilotto: For us, many of the technologies have federal funding underlying them. So it's actually a very easy thing for us to do, to work with federal funding, because we have the ability to commercialize it, to license it. There are some rights that we retain in any license agreement when the technology is funded by the federal government. And those are very accepted in the industry. Most commercial partners are already aware of them. There's nothing controversial. It's just retaining the rights for the researcher to continue to do research on it and to work with other not-for-profit institutions to continue to develop the technology and move it forward. So for federally funded inventions, very common, I think, for any research university, certainly for us. We're very used to working with them.

0:24:00 And I think the underlying stipulations that come with it are very friendly to both the university and the researcher, but also make it very possible for the commercial partner to move it forward and successfully commercialize it.

Rich Bendis: Thank God for the Bayh-Dole Act, right?

Phil Robilotto: Absolutely. For sure.

Dipanjan Pan: I totally agree with Phil. With any kind of biomedical technologies, it's very common to have NIH funding. Or even RNA funding. And Phil's group is so good, and it's been a pleasure to work with him. So I think it was a great experience for us to work together.

Rich Bendis: And, Dr. Pan, when a company comes in to develop a relationship with a university scientist or researcher, they're very interested in the core technology, but they're also interested in the people who have done the research. So once you establish this licensing relationship with an independent company outside of the university, what kind of ongoing relationship do you have or does your team have with this company after they do the license?

0:25:06

Dipanjan Pan: It's been a really crazy last year or so. I think Phil knows a little bit about it. Almost every day, I spend several hours talking to them and the people that are going to scale up and manufacture the whole test. And talking to them, there are some parties that are overseas, and they're trying to get some folks involved. We're working very closely with them. And as a matter of fact, I'm working as an unpaid scientific advisor for them. I cannot act as a paid advisor because of the conflict. But without my team's help and my help, I don't think anything is possible to develop a test so quickly. Because time is the essence here. And unless they move forward quickly, this is going to be a problem.

0:26:00 So we're working very closely. And as a matter of fact, they're also asking us to develop a working prototype for them, so my lab is also involved in that kind of activity.

Rich Bendis: Congratulations. Is there an estimate when we're going to be able to see this in the commercial market?

Dipanjan Pan: So we're approaching two approaches. One is really a plasmonic approach that I just described. That will not be for home-based use, but for pharmacies, or airports, or schools, offices. And the other technology that we're pursuing is a home-based test. So we're hoping that one of them will be in the market three months from now.

Rich Bendis: And Phil can't wait because that's when royalties start coming in, right, Phil?

Dipanjan Pan: Well, there's a lot of positives about that.

Rich Bendis: Well, thank you. This is really exciting.

0:27:00 And to see something that's impacting people all over the world is getting strong scientific support, and research, and potential commercialization right out of Baltimore and right out of UMB, it really shines a light over our region. And another thing, which some of you may or may not know, is that if you look at Warp Speed funding that BARDA sent out, 40% of the Warp Speed funding came into Maryland. And if you look at the vaccine development, diagnostics like you're doing, therapeutic research, it's been over $8 billion that has come into the state of Maryland because of the quality of the assets and scientists that we have in our region. So you're just one of those people, Dr. Pan, that I think add value to the

credibility of why this is the fourth leading biopharma cluster in America, and it's going to be number three one day based on more successes like this.

Dipanjan Pan: We can't wait.

Rich Bendis: We all can't wait for that. Building upon this, Phil, you've had some super success as you talk about Harpoon.

0:28:04 What a way to launch. It really does give you a little more capital to reinvest, based on that success story, which is nice, to make it sustainable with your mission. But talk a little bit about the future of what you see for UM Ventures, and the way your organization has grown, and what we look for in the future.

Phil Robilotto: Yeah. Well, like I sort of alluded to earlier, the nice thing about having Harpoon as your first investment–our second was Living Pharma, which we also exited. And then, just this past year, SurgiGyn, which was another company that we started through the Ventures team, and Breethe, which was Bart Griffith's company that was sold to ABIOMED. And those were all UM Ventures investments. So that allows us to build out that lab space, to have physical space for folks that are trying to get their company up and off the ground that a couple years ago would've been sort of stuck. Now they've got a place to go. We can help them get over there. There's also, like I said, this medical device space that we've got up and ready to go.

0:29:02 For example, when I first met Jim Gammie before Harpoon had started, it took a long time to get those first prototypes iterated and made. And now, we can do it very, very quickly. There's great support through Maryland Innovation Initiative. That's a great program that's really helped a lot of our inventors move technologies faster. So we expect to do more of that to be able to support more of these really promising technologies like the one we've been talking about, but help get them out of the lab, get some more resources behind them, get some more funding behind them. A couple of other things I just would mention that may be of interest to people listening, our group is really focused on UMB technologies. And we work for UMB, so everything we do is really designed to help support our faculty, our inventors, and our startups. But there's also some affiliated groups or programs under the UM Ventures

umbrella. One is the Baltimore Fund, and that's managed by Mary Morris, who we work really closely with.

0:30:03 And the whole goal of that program is to get companies into Baltimore innovation parks or districts like the BioPark. So if you have a small company, you're somehow affiliated with one of the university system campuses, and you're interested in doing that, there's some assistance for you to do it through that program. And the other, I think, great advance that we've seen from the University Maryland system in the past couple years is the Momentum Fund, which was initiated just a couple of years ago. It's already made a good number of investments in companies that are affiliated with University of Maryland's system. So they're much broader. They have a much broader definition than we do. Again, we're more limited to focusing on UMB IP-based companies. They work with companies coming out of or related to Towson and different BioParks. This is something that the system did not have just a few years ago, and now you've got this fund that's able to put in matching funds to companies that are in Maryland, that are affiliated with the system somehow, and they can put in up to $500,000 in a given round.

0:31:09 I think their typical investment's from around $200,000 to $250,000, but all this support and all this financing really helps get these companies up, out, and on their feet, and able to be sustainable and sort of survive that Valley of Death you always hear about, and that's really what the system is trying to support getting its companies through.

Rich Bendis: Well, right now, it's the Valley of Injected Life, isn't it, Phil?

Phil Robilotto: Absolutely. It's come 180.

Rich Bendis: Yeah, if you look at the Valley of Death, it's changed dramatically within our ecosystem over the last ten years, and people who have left the region or Baltimore, and then they come back, they're amazed at how transformative it's been, and basically, how the ecosystem has changed. And that helps attract scientists and researchers like Dr. Pan.

Phil Robilotto: Absolutely.

Rich Bendis: So one of the reasons we're doing this podcast, Dr. Pan, is that you might have some associates around the United States, around the world, you're telling them how successful you've been here.

0:32:04 We want more of your type to come back into this region or attract them here because it's a very vibrant ecosystem.

Dipanjan Pan: Absolutely.

Rich Bendis: And maybe you might like to summarize some of those benefits to the listeners for why it's been a great transition for you to come.

Dipanjan Pan: Well, so far, it's been great because of exactly what you just said. Great ecosystem. We're close to NIH, NSF, FDA, all the national labs, and NIST, and University of Maryland Baltimore, and College Park, and UMBC. And when we developed this test, it's not just the biomedical, but I have been contacted by–and in fact, we were working with multiple companies for developing sensors for detecting the virus in air. So it's not just the biomedical, but it's environmental. And the opportunities are tremendous. And so far, it's been great.

0:33:03 And, of course, it is because of the pandemic that happened, but it is also true that the economic infrastructure that is present here is quite phenomenal. So I would totally agree with you that this is a really, really great place for biomedical scientists to flourish.

Rich Bendis: Well, we're glad you're here. And before I open it up for closing comments, we've been talking with Phil Robilotto, who's the Director of UM Ventures at UMB in Baltimore, and Dr. Pan. And again, he holds a joint appointment, which is very important to look at the difference of someone who has the ability to interact with both engineering and medicine. So you can see the technology and the clinical side as you're doing research in your lab and what the impact might be when it comes into that clinical market. Dr. Pan's a professor of radiology, chemical, biomedical, environment engineering at UMBC, and a professor of diagnostic radiology, nuclear medicine, and pediatrics at the University of Maryland School of Medicine.

0:34:07 So that's a mouthful, but it really has shown what you can do when you have that dual appointment and trying to work in the translational research area and be able to bring both disciplines together. So I want to thank both Phil and Dr. Pan, and, Phil, you have any closing comments for our listeners?

Phil Robilotto: I would say if you have any questions about UM Ventures or are looking to get in touch with either myself or someone from the licensing group, or Mary Morris from the Baltimore Fund, or Claire Broido Johnson, who runs the Momentum Fund, you can find us on the web. We are at UMVentures.org. And everybody's phone numbers, bios, email. Please reach out if you have any questions about any of the things I mentioned, or you're interested in maybe licensing technology.

Rich Bendis: And, Phil, thank you very much, and congratulations on your success. And keep it coming.

0:35:01 And, Dr. Pan, any closing comments?

Dipanjan Pan: Just want to say thank you for having me. It's been great talking to you.

Rich Bendis: Great. Thank you very much, and congratulations to both of you. Hope to follow up again so that you can take your platform technology into another area, and we'll talk about your next success down the road.

Dipanjan Pan: Absolutely. We're already doing that.

Rich Bendis: Why would I even suspect that, Dr. Pan? So, Phil, Dr. Pan, thank you very much for being on *BioTalk*.

Dipanjan Pan: Thank you.

Phil Robilotto: Thanks, Rich. Appreciate it.

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

End of recording