

EP.75 - Dr. James Crowe 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, your host for *BioTalk*. And normally, we are interviewing leaders from the BioHealth Capital Region, and sometimes we expand outside of the geographic region of Maryland, DC, and Virginia, and we're doing that today. The reason for that is we have a world-renowned immunologist who's also a physician-scientist-entrepreneur, who'll be the first time that the listeners in the BioHealth Capital Region will get to hear Dr. James Crowe, Jr., who's an MD. He's director of the Vanderbilt Vaccine Center. He's also a professor of pediatrics and pathology, microbiology, and immunology, and he's an Ann Scott Carell Chair at Vanderbilt.

[0:01:01] And with all of that, is there anything else for anybody else to do at Vanderbilt, with everything that you're doing, Dr. Crowe?

Dr. James Crowe: Well, hi, Rich. Thanks for having me. We've got lots of little stickers here, and I've been collecting them. It's more of a problem of not being able to say no, I think.

Rich Bendis: That's probably true, but thank you, and welcome to *BioTalk*. We're really glad to have you there today. Really want to start with you introducing yourself to our listeners about sort of your background, how you've evolved to where you are today, and then we're going to drill down on some of the other areas of interest to both you and I.

Dr. James Crowe: Well, I think I'm always a little embarrassed to tell the story. It's not a linear story. I had goals and places I was going, and I ended up somewhere else. So I trained as a physician. My father's a physician, actually a pediatric radiologist. I grew up around medicine, and I wanted to be a doctor. And then, I think in high school and college, I migrated more toward the idea of justice in the world. I wanted the world to be a better place. I wanted to do good in the world.

[0:02:00] I thought about how to marry those two streams of thought, intellectual interest of medicine and the wanting to do good in the world, and I ended up thinking, "Well, I'm going to be a doctor in sub-Saharan Africa

and work on the ground, improve the health of people who don't have high access to healthcare." And I spent time as a medical student, actually, in West Africa, East Africa. I went to Papua New Guinea and in crazy places, looking, "Where would I spent my life in the bush being a doctor?" Met my wife in medical school, Lisa Crowe, who's an amazing person. She had worked in Haiti and in other challenging things. But in the end, we decided not to live in a lower-middle-income country, and we decided to stay in the United States. And I was left with, "What am I going to do with these aspirations to improve the health of people in sub-Saharan Africa or places like that, and yet, I'm going to be in the United States?" And that led me to a career in research. Actually came to the DC area, trained at NIH and the intramural program in research.

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I did not see patients for five years at all. I just worked in the lab of renowned scientist Bob Chanock, who was Albert Sabin's main protege, really. And Sabin, probably the most remarkable vaccine scientist of the 20th century. And Sabin had trained with him and had a vaccine lab at NIH. And that's where I went, I trained and got the bug for vaccines and immunotherapy, and then I came to Vanderbilt 25 years ago and tried to set up in my own shop. And we've been clawing our way, trying to make it all happen here. I originally wanted to be a doctor in Africa and here I am in a medical center, doing, you know, molecular immunology. So not very linear, but it's worked out OK.

Rich Bendis:

Congratulations, and thank you for being willing to give back, having the vision for what you wanted to do. But 25 years at Vanderbilt, that's a long time. You look at the half-life of generally most scientists and researchers, they go from institution to institution.

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So what's kept you at Vanderbilt for 25 years? And you say you built this center. Talk a little bit about the center and how the evolution of the center has grown under your leadership.

Dr. James Crowe:

Well, institutions take different views of how they allow individual faculty members or groups to grow. Some view a research, medical center like ours as a mall, and individual faculty members rent little stores in the mall, basically. You pay your rent, and you get some space. And it's better to have small mom and pop shops, and in the aggregate, they do well. And some institutions actually limit the size of the footprint you can have. And Vanderbilt allowed me to increase the program in size and ambition

to where we are not a traditional lab in our aspirations, our resources, or our size. So currently we occupy an entire floor of a relatively new, state-of-the-art medical research building. We've pulled together about \$150 million of extramural funding.

[0:05:03] The place looks like a biotech company. Robots, we have 50 people running around, we have all sorts of technical skills here, computer people, instrument people, scientist-administrators. So I think Vanderbilt allowed me to pursue big science visions as long as we could obtain the resources and expand the footprint. And not all institutions allow that. So every time I've looked at going somewhere, I've thought about the three or four years it would take to rebuild the capacity we have. And I just cannot see taking the opportunity cost. We have a good situation, and we're executing well, so I like being here. And one other little fact is, I was born at Vanderbilt where I work. I was born in the hospital here. So my family is originally from here. In fact, my original lab when I started out was in the building that used to be the hospital. So I was working for about 15 years about 50 feet from where I was born.

[0:06:00] And I was always worried that one day I'd slump over in my desk and complete the circle, all in one building. I got out of that building.

Rich Bendis: You would've lived the cradle to grave as they talk about in science, correct?

Dr. James Crowe: Exactly. So the region here is culturally similar to what I grew up in. I grew up in mostly North Carolina and Tennessee. But I did live in a formative part of my professional life at NIH in Bethesda and understood the region's capacity, and continued to work with NIH people. And a lot of the businesses or pharma and biotech that are in the 270 corridor, I've continued to collaborate with a lot of people there, and I have fond connections to the region. So I love the area, and I think it has enormous potential in the biotech space.

Rich Bendis: I'm sure the administration, once they hear you speak, are going to be glad to hear that you want to stay and aren't looking to move to any other region in the United States, Dr. Crowe.

Dr. James Crowe: People call me, and I get offers. The last discussion I had, somebody said, "Well, if we gave you \$100 million, would you come rebuild what you've got there, and just move it here?"

[0:07:06] And at some point, you say, "Well, people may have a price." It crossed my mind what I might be able to do with \$100 million in cash. But in the end, it's not about money. Money is not the thing. You need an environment where you can thrive. And we have, over time, built what we need here. We're contributing to the ecosystem, and it's benefitting us. I don't see myself leaving, although we consider ourselves global citizens. So we want to connect to collaborators and particularly people in the commercial space who can help us achieve our visions and passions. So I don't think of us as a regionally located lab anyway. I think of us as an internationally global academic resource, and we partner with people all over the world.

Rich Bendis: And now that you have this \$150 million center, 50 people. What are your personal research interests that you're able to continue doing personal research on today now that you've built this large center?

[0:08:03] And are you able to follow your vision and your dream about what you personally wanted to accomplish?

Dr. James Crowe: I'm the problem around here, actually. I'm always dreaming about big things, bigger, faster, new things. I get us overextended and overcommitted. The team's constantly trying to pull me back. So I've actually been working with some executive coaches over the last few years, trying to figure out, "What is my job here? What am I supposed to be doing?" And we've realized that at a business viewpoint, I should be more of the CEO sort of person because I'm always thinking five years down the line of the strategic goals and things that can't be done right now that we're uniquely positioned to do. "What are things that no company can do and almost no other academic group? Nobody else can do something except us. What is that thing? And let's bring it into the world." That's the way I'm thinking. Looking at my personal interests, they're pretty vague. I think about things like self-organizing systems.

[0:09:01] I'll see a flock of birds flying around the sky, and somehow, they all know how to move together. It's beautiful. Just the beauty of it and the capacity for that group of birds to communicate in whatever language they do on the fly, I'm completely fascinated by that. And I think about, "Well, your body's immune system does that. You have billions of cells floating around, and they know how to respond to an invader, make inflammation happen, and then reset back to homeostasis. It's just like

that flock of birds." So I'm always thinking, like, "What could we learn from ecosystem science, or birds, or any other type of thinking that we can bring into our somewhat insular little world of immunology and biotech?" So I'm a little bit of a dreamer. Even cognitive biases, too. I've been reading Kahneman-Tversky's Nobel Prize-winning work on cognitive bias, trying to figure out, "Why can't we see things right in front of us?" A lot of times we have data, we just miss things that are glaring. And it has to do with these cognitive biases. So I see my own role as getting out in front of the group.

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It's not exactly just to think out of the box but think differently and not be enmeshed in the day-to-day operations. And yet, I still care about that. So I'm trying to figure that out still. Fortunately, I've had people come around me who are very talented in team-building operations, budgeting, and administrative things, and they do much better than I would ever do. And that's been a blessing to me to be attached to a team where I can sort of do my thing, and people still get paid.

Rich Bendis:

You bring up something that I went through early in my career. I went through a week-long class that was based on, "How do you build a quality organization?" And the message at the end was, "Your organization's only going to be as good as far as your shadow will reach to the extensions of you and your team." So I guess what you're saying right now is, the challenging you have is making sure you surround yourself with people that can be extensions of yourself, but also bring complementary skills to which you may not possess yourself, as you're trying to get to this next level of growth with this center, which you've done a fantastic job in building today.

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Dr. James Crowe:

Yeah, I think you want common passions, and drive, and ambition, and desires. If you don't want to make the world a better place, then partly, you don't get what we're doing. Again, we're not about money, or fame, or power. That's not what we're trying to do here. We have very specific desires to bring, in our case, our antibody science into the world to better people's health all around the world. So if we agree about that, then we definitely need complementary skills to what I bring. We don't want sameness, but we want sort of a common why. "Why are we doing this?" Exactly how we're doing it, I'm letting the other [0:11:46] how we're

doing it. So this has been fun. I'm trying to put a screwdriver in my own brain, and let go of this thing, and just let it be awesome. And what I've learned from how to make it awesome is just get out of the way, let these guys do their thing.

Rich Bendis: You've talked about the physician thing, the scientist thing, and sort of now the emerging CEO role.

[0:12:03] But there's also this entrepreneurial CEO component of this, which might be different than the CEO of the center. Because at the same time, you're playing around with this company, which you've been a founder of, IDBiologics. So talk a little bit about how that evolved, and then how you see it continuing to evolve in the future, based on all the other priorities you have.

Dr. James Crowe: We do basic science to understand how antibodies contribute to immunity. And a lot of what we do is next-generation sequencing, structural biology, crystallography, and I think of it as sort of abstract art. It's beautiful, and it feeds our curiosity. But I also wanted to move the molecules into the clinic. And after 20 years or so, I realized, our current model is to make things in the academic center, hand them to our tech transfer office, and then all of us together try to pitch this to the outside world, and to get somebody to pick it up and develop it.

[0:13:02] You run into this wall everybody calls the Valley of Death. At that point, you need \$15, \$20 million just to test the proof of concept in humans, and it's risky, and most of that stuff doesn't work, so why should somebody put the money in? And I kept running up into this obstacle. I literally went to the real CEO of my institution, who's the dean and associate vice chancellor, or whatever the titles are, but is essentially the CEO, and said, "I want our stuff to be in clinical trials. I need some help here." To their credit, they brought in outside consultants to do due diligence on our assets, and they looked at the antibody program we had and even the antibodies that we'd already made and said, "We already see about \$500 million of intrinsic asset that you have in your freezers and a lot more after that. Because of the platform, yes, we see that this could be a business." And so the institution and I made a plan to spin out [I-Tech 0:13:55], which became IDBiologics. And the idea was, "Vanderbilt doesn't really do product development.

[0:14:00] We don't manufacture, we don't have GMP, we don't have any of that." So we would do the discovery and then offer the lead antibodies, the lead drug substances, basically, to the company, and the company would go the next mile to do the development, raise the capital to get to the other side of phase 1, and keep going. So I did it because I was dissatisfied with our ability to move things out into the world. Now, starting a biotech is a nontrivial exercise, I have learned. Because you sort of get into the world of money. If you use a venture capital model, the money has to 10x pretty rapidly, or it just doesn't meet that goal. We have done a series A in the company, we've got leads out, we have targets, and we have a board that's excited about what we're doing. So it's an early startup, early phase. There are investors out there who have \$40, \$50 million and want to do the next step with us. They ought to come look because some of the assets are pretty amazing. But it's a de-risking process. So I think that's why I did the startup was not so much I wanted to be in business. And again, I personally am not primarily driven by money.

[0:15:01] But I wanted the clones to get out there in the world, to get in development, and potentially become products, and people's health would benefit. I did it for that reason, but it's been a fantastic learning experience and curve. I feel much less cynical about the business world, actually, because academics tend to be pretty naive about how you get things done in the world. Now, I have a tremendous amount of respect for businesspeople after stepping into this world a little bit.

Rich Bendis: Are you still involved day-to-day with IDBiologics or as a CEO? Or have you tried to bring in some of the professional management now?

Dr. James Crowe: Because of the fact I did not leave Vanderbilt, I have my full-time job here running the vaccine center at Vanderbilt, I am really not allowed by our conflict of interest policies to have a C-suite appointment in a for-profit company. So I did found the company, and I am on the board, and I am a scientific advisor. I spend a fair amount of time on calls, and board meetings, and strategy sessions, and thinking about it.

[0:16:04] But I'm more of the scientific advisor. We have brought on an executive chair of our board, we have a president we have hired, and then I would say we've done this virtually, in a way. We've given options or equity to people who are very experienced in this field, many of whom have 30

years of experience directly in the areas where we need expertise. So that's working very well for us right now. So we have a few full-time more business-oriented folks. Ken Kelley is the executive chair of the board. And I think once we accomplish series B, we would probably hire a full-time CEO. So together, the three of us accomplish some of those. We don't really have a named CEO at this time.

Rich Bendis: Thank you for that update on IDBiologics. It sounds exciting, but it sounds like your conflict of interest policies are very similar to NIH's that you have at Vanderbilt because the scientists there have to basically leave for a whole year before they'd be able to get engaged full-time in some type of a spinout around the research that they're involved in.

[0:17:03] But it sounds like you're pretty busy anyway. You have enough to keep you occupied. It's nice to be able to delegate some of that. As an immunologist, one of the leading immunologists in the world and United States right now, you've been intimately involved, directly and indirectly, around this COVID-19 pandemic. And I think it would be good for the listeners to hear about what Dr. James Crowe has been doing as it relates to antibodies, COVID-19, this pandemic, and some of the relationships and research that you've been engaged in. Please enlighten us.

Dr. James Crowe: Yeah, it's been a wild and crazy year. I mentioned a little earlier that I'd been working with executive coaches and trying to learn how to delegate and allow operations to run independently. A self-managed group was sort of the goal. And so I had planned for two years and finally pulled the trigger, worked out all the arrangements to go to Italy for three months on a sabbatical to do some strategic planning for my last ten years.

[0:18:01] Like, "What's the next big mountain for us to climb, and how will we get there?" And I literally got on a plane February 9 and flew to Italy to do that sabbatical. But we were engaged with DARPA, which is an agency in the DOD, as one of the performer sites for their large, rapid antibody discovery programs called Pandemic Prevention Program, or P3. And the goal there is to do things that were kind of ridiculous. Go from an outbreak to the cure in 60 days. That was what the grant was about. We got one of these. Ours is \$28 million, so it's a substantial effort to build a fast platform. And in January, when COVID hit the shores of the United States, I walked in the Urgent Care in Seattle, the first known case, January 19. By January 26, my group had the first sample from that first

case in the United States, and we were launched. End of January, we're launching not a simulation, a full-blown, what we call sprint discovery as fast as possible, and I was walking out the door to Italy.

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And who knew that the world epidemic--you know, Italy became the epicenter of this epidemic, and it sort of closed around me. And I basically had to scramble out of the country with my wife on the last flight out of Rome on March 10. So it was pretty chaotic running my team from March, when I was supposed to be fully disengaged and doing strategic planning. But we were in full-blown mode to find human monoclonal antibodies that would prevent or treat SARS-COV-2. And we accomplished that goal. We got, finally, a really good sample March 14. And 25 days later, we handed sequences to a pharma partner, in that case, AstraZeneca, which is in the DC area. They developed those antibodies, and they're now in five phase 3 trials. I hope by the end of this calendar year, we'll know about those. And so far, so good. So we were able to launch this ultra-fast discovery program, and deliver lead drug candidates to a pharma partner, and get into clinic all within couple of months. It was very gratifying.

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Having said what I've said about what I've wanted to do with my own efforts and my team's effort, this is what we built this thing for. I'm not glad that a pandemic occurred, but if one's going to occur, we want to be ready and deploy our skills and our passion, and we did. And it's been very rewarding.

Rich Bendis:

As you look at other work that's been going on around the world, had anybody been on as fast a track as you had been in your antibody research to be able to give it to AstraZeneca within that period of time?

Dr. James Crowe:

I think it's very interesting to look at the historical moment. So during the outbreak, several other groups also did it. So Regeneron turned the crank quickly, a company that used to be quite small, AbCellera, did this, and Lilly picked up their antibodies. So all three of those groups executed pretty rapidly to make antibodies that are on trials. The way I think about this is like the four-minute mile in Roger Bannister. So people thought this was humanly impossible for a human being to run a four-minute mile.

[0:21:00] And people were so far away, and they got closer and closer. Finally, Bannister did it. And then within days or weeks, multiple people started running the four-minute mile. It was just a mental thing. Central governor. And I've done a lot of running in my life, myself. I was really interested, the two-hour marathon has been a goal, just broken. And so this is impossible. People were running two hours and three minutes, and getting the extra three minutes was impossible. Now, a guy's done it, and it's like, "Well, of course you could do it. It's known you can do it." And it becomes obvious you should do it, if you're in this space. So I think we and others, particularly egged on by DARPA, started saying, "We're contractually obligated to make this happen, to develop this technology." And we pushed, pushed, pushed. And it's going to be the situation normal now. Everybody's going to do it this fast. What was impossible last year is normal this year. I talk with my team frequently. We're doing some soul searching. People used to think we were pretty fancy because we can make human monoclonals to a lot of targets. Now, I tell them, "That's a commodity."

[0:22:00] People can do this in weeks now, probably in their garage. The next go-round, there's going to be 100 groups that do this within a month." So I think our own group needs to think, "Four-minute mile's over. That's not the thing. We need to think, 'What's the next goal, technologically?'"

Rich Bendis: I guess that's where you and I came together, is that based on a common acquaintance, Stu Solomon, who's the CEO and founder of Connected DMV in the DMV region and a close associate of yours. Basically, I had never met you or heard of you before. When he was doing his work on the Connected DMV task force in Washington DC, looking at the things that needed to be done during the pandemic, as well as, "How do you emerge stronger end of pandemic?" they put a number of initiatives in front of their 50 members of that task force to decide, really, what could be groundbreaking. And one of the things they said is, "Why don't we create a Global Pandemic Prevention and Bioterrorism Center?"

[0:23:01] Because we have some of the major assets with the FDA, NIH, AstraZeneca, NovaVax, GSK, Emergence sitting in our backyard, and we're becoming sort of an epicenter around this pandemic and coming up with solutions, research, and therapeutics, vaccines, and diagnostics." And the task force said yes, 100% universally, "Let's do this, but let's decide what

it's going to be." So I think Stu reached out to you and said, "Hey, what could this really be, Dr. Crowe?" And you said, "Well, I've been thinking about this." You mentioned the number 100. And all of a sudden, he started talking about this Ahead 100 program, which you had been conceptualizing for a long time. And based on your recent DARPA experience, how it actually could become a reality. So that's a big lead-in, but it sets the stage for you to talk about something called Ahead 100, which is going to be one of the major themes around this center that we're conceptualizing in the DMV right now.

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So please tell our listeners a little bit about your vision for something called Ahead 100.

Dr. James Crowe:

This has sort of become my life passion. I want this to happen, and I think it can happen, and it will happen. It should happen. I think more people hear about the idea, they see how much sense it makes. So I've lived through a number of epidemics in the last, say, 15 years, in which we've lived through a news cycle. News cycles, hype cycles. People are really interested in something, and it dies out. So H5 bird flu. You remember? I think that was in '95. There was the threat of bird flu, and that sort of died away. H5N1. We've subsequently had another round of that with H7N9 started breaking out, and they killed all the birds, and that went away temporarily. We've also had SARS, the first SARS. We had Zika, Chikungunya, Ebola, and every time these things happen, our group would kick into high gear.

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And we didn't used to be 60-day capable, we were two-year capable. So we put all our efforts into making human monoclonal antibodies for one of these agents, and at the end of the two years, we have it. We have the golden ring. We're ready to go. And the news cameras would show up at our place and say, "Hey, there's a new outbreak. What have you done for that?" We're like, "Well, we want to talk to you about the last one because we just worked night and day to get the solution for the last one." And this happened to us so many times. I started thinking about, "Well, what if instead of just getting faster and faster," which we know we wanted to do, "what if we had these things ahead of time?" So a new outbreak occurred and somebody said, "Wow, Mayaro virus, a mosquito-borne virus that's been in Brazil for a while, has now gone across the world," which hasn't happened yet, but very well could. I'd love to be

able to say, "Well, we have the solution for that. We've got it in the freezer because we thought about this ahead of time. We looked at all of the things that crossed from mosquitos, bats, and all the other sources of infection."

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You can make an encyclopedia of all these things and anticipate some of these will cross over. And the reason we came up 100 has to do with really my own experience in personal finance. So if you've got your retirement fund, do you go out, and pick a single stock, and bet big on that one stock? Most financial advisors say, "Don't do that because not many people can pick the right stock. Instead, why don't you buy an index fund, like Index 500?" And Index 500 kind of goes up 5% a year in perpetuity, and you're going to benefit from that. Because you know some of the stocks go up dramatically and will drag the whole thing up. I'm sort of thinking, "Wow, instead of thinking five that we would guess on or six and think we're going to be really smart, it isn't going to be those, and no one's ever predicted the next one. People have lists thinking it'll be this and that. And then Ebola is in Atlanta. Unbelievable. No one would've predicted that." We started thinking, "No, no, no. No more stock picking. We need an index approach."

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And we took everybody's list. So the NIH has a list, the FDA has a list, the Coalition for Epidemic Preparedness had a list of eight. We took everybody's list like sticky notes, and we put them together. We collated them, and you get pretty close to 100 if you put everybody's list there. And we said, "We're going to do that. That's what we're going to do. We're going to get them all ahead of time, and when an outbreak occurs, we're not going to be scrambling for eight, ten, twelve months to get the cure. We'll just say, 'We got that.' And we're going to look smart, which isn't really the point. We're going to be prepared." And so that's the Ahead 100 program, is to make antibody prevention and therapy lead molecules, down-select the leads, test them in phase 1 trials, and be ready to escalate in the time of pandemic. And the reason I connected with Stu was just what you said, he's running a nonprofit consortium. And that's what it's going to take because government alone can't do this, industry alone can't do this, academics, I've already mentioned, cannot commercialize things themselves.

[0:28:00] Nonprofits and philanthropists have an interest, but they don't have--but if you bring all those people together in a coordinated way, it's like, win, win, win, win. And Stu had assembled a nonprofit to do that. And so trying to align the scientific objectives of being prepared for a pandemic with antibodies with what Stu's already built in the DMV region, it's a great fit. And the more people hear about it, everybody seems excited about it. So I'm excited. I feel the fuel of, "Wow, this is actually going to happen. We're going to be ready ahead of time for the next pandemic if we execute on this."

Rich Bendis: When did you come up with your list of 100? What actions did you take once you came up with that list to try to sell this idea on your own before you connected with Stu at Connected DMV?

Dr. James Crowe: We had a pretty systematic process. We thought of all the antibodies that have already crossed over from animals or vectors into humans. We took out infections disease textbooks, and looked at the index in the back, and just make sure we're covering everything. You can group viruses in particular into families.

[0:29:01] So Filoviruses, Ebola and Marburg. Or Alphaviruses, you've got Eastern Equine, also have got Chikungunya. So you can group them into family, and we did a systematic collection of things. So that was the start. But I started this five or six years ago, and the first thing I did was, I went to a person who I knew cared about global health very deeply and had about \$100 in their pocket, and I said, "Hey, why don't you give me a billion dollars to do this because it makes sense, and you and I both want this?" And I didn't go directly to the person because these types of people have a crowd of people around them. But I was proposing it to a high net worth individual who has common interest in this area, and that group of people, really, who think about strategies of how to impact the world said, "Well, you have the capacity," and we do, at Vanderbilt, "to do the discovery process. But you don't have manufacturers lined up, you don't have a real business plan here, and most of the money that we would give you would go to the manufacturing side, not to the discovery."

[0:30:02] The discovery's just the very beginning. You need to come back here with serious partners who have buildings, manufacturing sites, expertise in that, and agreements to coordinate. Because right now, you're just dreaming." And so that's what I've done for five years, contact

companies, government, other nonprofits, other philanthropists, and other academic groups to say, "Actually, we need everybody in this. It isn't just going to be me and my little group or me and one company. This has got to be a global effort. And it's got to be every sector." And it took me five years to learn that. It's not just money going to drop in, and I can go out and buy 100 GMP-manufactured products with clinical trials. You just don't buy that. You have to build, over time, mutual interest. And so that philanthropist set me off on that, and that's ultimately how I ended up with Stu. Because Stu had already pre-aggregated all of those things, and I don't have to build it from scratch.

Rich Bendis:

So five years later, here we are.

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December the 15th is going to be the first steering committee meeting for the Global Pandemic Prevention and Biodefense Center, and who is assembling, with Stu's assistance and your own, a cast of global, well-known people who share a vision for what you've been thinking about for 25 years probably or more, it's actually one step closer to becoming reality. But at the same time, the center needs a plan. Because everybody's asking for what the philanthropist asked you before. What is the plan? The research component's easy. But until you get someone who can actually get this into the marketplace, just as we have six or seven companies right now working on a vaccine for COVID-19, it really will never get into the commercial world. So are you excited about this first steering committee meeting that's going to happen for the Global Pandemic Center December the 15th, Dr. Crowe? And tell us what you see as your vision that this center can do that you couldn't do.

[0:32:02]

Dr. James Crowe:

Well, I'm super excited. It's been a dream for so long to have people working on this together. But we're kind of overstating that it's only my dream. I think this is colliding with something that makes sense in the moment, and other people have been thinking about prevention and thinking we need to be proactive. It's just not clear, "How would you do that?" And so a lot of the national and even world leaders that are convening tomorrow, they've also been thinking about this problem. And I think that's why they're showing up. So to me, it's not all on me. I'm just joining a group, and threads are colliding. I found it very compelling when Malcolm Gladwell wrote the book *Outliers* and was sort of explaining why

things happen at a certain time in history. And, for instance, it's remarkable that Bill Gates and Steve Jobs were born within six months of each other. He makes the argument if Jobs was born three years before, he wouldn't have had access to a mainframe computer through his affiliations, family, and friends, and if he was born three years after that, he would've missed the boat.

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It would've already happened by someone who was very gifted. And so both of those people launched their world-changing efforts. So it was partly them. I mean, they were there, and ready, and willing. But the idea had matured, and the circumstances had aligned. And that's what's happening here. So this isn't just me. Lots of people are showing up in one place who want a region to coordinate. They want government, academia, nonprofits, and corporate partners to work together. We just saw why we need that. COVID shows you, you can't fix this stuff unless everybody's working together. So that historical idea and experiment that we just lived through justifies why the moment is now for this. Also, the antibody technology is almost a commodity. You could almost do this in your garage. So this is no longer a high-risk proposition to make antibodies. And there's a deep-felt need in the world to be ready for the next one. So I don't see this as me or my meeting. This is a meeting I'm showing up to, which is colliding with the aspirations of so many other people.

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So that makes me encouraged because I feel like the historical time is now. This is when this is going to happen.

Rich Bendis:

Well, your passion and enthusiasm is coming through in this podcast, and I think that without someone that has the vision and the passion that you do have for this, to bring all of these other parties to help come together, to help achieve this, it wouldn't happen. So tomorrow, you better be on. You better be as excited as you are today talking about this, which I know is not going to be a problem. Because some of the players that can make this a reality will be there for you to meet with tomorrow. But in the meantime, you've been actually given a little recognition recently that I'd like to chat about. And generally this time of the year, the government tries to recognize people with their Golden Fleece awards. But yet, there's another award that's come up recently that is called the Golden

Goose award. I'd never heard about it until the person that we're interviewing right now for this podcast was a recipient.

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So congratulations, number one, on being a recipient of the Golden Goose award. But please tell our listeners what it is and what you're recognized for.

Dr. James Crowe:

It's a recognition of me, and really more so our group, of what we did during the COVID outbreak to bring to bear our talents. The Golden Fleece award was made up by Senator Proxmire in the past to humiliate scientists who had gotten federal funding, US tax dollar funding for things that sound ridiculous. Fundamental studies of the sex life of flies or something like that.

Rich Bendis:

\$2,000 hammers.

Dr. James Crowe:

Well, it wasn't just the hammer. The title of the study had to be particularly provocative. But the American Association for the Advancement of Science and a lot of other thinking senators and congresspeople think basic science is the foundation on which all the translational and product development stuff comes. And they know that. And so they wanted to counteract the wasteful image of basic science funding and came up with Golden Goose.

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So it's sort of the idea that federal funding for basic science, even crazy ideas, is where the golden egg comes from. And I don't know why they called it Golden Goose.

Rich Bendis:

Well the goose laid the golden egg, Dr. Crowe.

Dr. James Crowe:

They're called the Golden Goose Awards, and we received one of them as a sort of a special edition this year because of COVID. And they wanted to highlight when federal funding led to something beneficial for the nation. And in this case, it had to be done very rapidly. So I was very gratified to see our group recognized. They have a website. It's cool. You can go on and see, they did videos of people's stories. Not just mine, but others. It's very interesting to see why people do science, why they end up getting into the curiosity of it, and how that curiosity pays off for everyone. And why the federal government should put more, not less money into this stuff.

Rich Bendis: What's the website, since you've got the curiosity?

Dr. James Crowe: It's GoldenGooseAwards.org.

Rich Bendis: So we're getting ready to wrap up here pretty soon, though, but I'd be remiss if I didn't talk about the future beyond some of your personal views on the Pandemic Center and Ahead 100.

[0:37:07] So let's talk a little bit about what some of your personal goals are in the future. And, you know, everybody talks about legacies. And you certainly have a number of things that you'd like to have to be your legacy. But what would be that one thing you want to be remembered for, and what is the next major goal you're shooting for?

Dr. James Crowe: I am getting of a certain age, I guess. But the whole idea of me doing a sabbatical and rebooting, in my mind, Lord willing, I plan about a ten-year sprint left in me going at this pace. It's clear that we can make antibodies, and I don't want to just keep doing more of the same. So the Ahead 100 program and investing my energies in getting solutions for those is a big part of what I think we can contribute to. But I also think there are still scientific advances that can be made in our field that we don't know about and can't see yet. And I want to dig deep, personally, to think, "What are the mechanisms in biology that we could still discover?

[0:38:04] There's plenty of room at the bottom." He was talking about scale and electron microscopy and said, "There are things smaller than electrons, people." Even though he couldn't see them, he was just predicting. I feel like there's plenty of more mechanisms of immunity that we hadn't touched on. I want to spend the last ten years finding those, discovering them, just enjoying the beauty of knowing those things, just the abstract idea of understanding how the world works. I want to understand the immune system in greater depth, and then I'd like to use that knowledge to achieve even a greater capacity to prevent and treat infections. I believe currently the major public health strategy that we have to deal with infections is vaccines. Vaccines are amazing, and they have really revolutionized our entire world and society. They've been the greatest financial, and personal, and health benefits in the history of the world, in my opinion. But I believe the antibodies will increasingly become the principal tool because we can go so fast, and they're going to be so nimble.

[0:39:06] And I want to contribute to additional discoveries that will enable this to be fast, cheap, ubiquitous. Back to my original dream. Every kid in sub-Saharan Africa should be able to grow up and achieve their potential and not have to deal with preventable infections. And I believe antibodies are going to be a big part of that, and I want to make that happen.

Rich Bendis: Well, I hope that you get a full 90 days to do your planning for your next ten years, rather than 30 days like you had last time, Dr. Crowe. I'm very happy to have had an opportunity to meet you through Stu and through the Pandemic Center, and look forward to working with you in the future. I want to thank you for everything you've done to assist in helping create part of a solution to what we're going through right now with this COVID-19 and what you can do, really, to help address future pandemics, which we can't even predict now.

[0:40:00] But with Ahead 100 successfully being implemented, which is part of your legacy, we should be able to make everybody's life a little bit better and safer in the future. So I've been speaking with Dr. James Crowe, director of Vanderbilt Vaccine Center. He's also the professor of pediatrics and pathology, microbiology, and immunology, and the Ann Scott Carell Chair at Vanderbilt. And this has been, really, an interesting podcast, Dr. Crowe. And I think the listeners are going to enjoy hearing you, your vision, what you've accomplished, and what we can do together to help address some of their needs about trying to make America and the world safer around future pandemics in our lifetime. So thank you very much for being on *BioTalk*.

Dr. James Crowe: Thanks for having me, Rich. It's been great being here.

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

End of recording