

EP.122 – Lucy Alexander

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 breakdown the biggest topics happening today in BioHealth.

Rich Bendis: Hi, this Rich Bendis, your host for *BioTalk*, and you're probably familiar now that we try to interview people who are contributing to the BioHealth Capital Region and the BioPharma industry, and people that we think have a topic that sometimes we don't talk enough about. That's one of those that we're going to talk about today, because it's the first time we've ever talked about supply chain on *BioTalk*. We don't have anybody that we can think of that would be better to discuss that than one of our strong supporting board members, AstraZeneca, and their Capabilities Lead and Global Supply Chain and Strategy Lead for AstraZeneca, Lucy Alexander. Lucy, welcome to *BioTalk*.

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Lucy Alexander: Thank you, Rich, really excited to be here. I'm a huge fan of BioHealth Innovations, and I'm really excited to be here today to talk about the exciting world of supply chain.

Rich Bendis: Yeah. [laughs] Do you think everybody's going to find it exciting? I'll tell you what, people are starting to recognize how important it is based on what we've just gone through in the last three years with the pandemic, and you're going to enlighten people about what AstraZeneca has done to manage through that process and how you're one of the leaders in supply-chain management around the world. Before we get started talking about this interesting new topic for us, I think it would be best for the listeners to hear about your background and introduce yourself to the *BioTalk* listeners, Lucy.

Lucy Alexander: Happy to do that, Rich. I'm Lucy Alexander, and I'm in the Global Supply Chain and Strategy Organization of AstraZeneca based here at our site in Gaithersburg, MD. I've been with AZ about 10 years and always based here. In fact, I started my career consulting and then moved to Johnson & Johnson in the New Jersey area and was with them for about 10 years.

0:02:05 I also spent some time with Novartis, and then actually, I'm an example of somebody who moved back to Maryland to work in the BioPharm industry, specifically in Maryland. I'm from this area, grew up here, actually northern Virginia, and really wanted to come back, be nearer to family. I'm just so thrilled that we have a BioPharma presence here in the state of Maryland, and I was able to come back, and I've had a fantastic career ever since. So, yeah, that's me.

Rich Bendis: Well, we're glad that you're one of those boomerang people that likes to come back from where they started, and actually that the ecosystem here can support people that have the kind of talent and knowledge that you have that actually can be incorporated into, really, the largest BioPharma company that we have within the whole BioHealth Capital Region, AstraZeneca, and is really the anchor for our ecosystem here.

0:02:58 So, we're glad you're here, Lucy, but now that you've introduced yourself briefly and talked a little bit—we both used a term “supply chain” several times already—why don't you explain to the listeners what supply chain really means in common English for us?

Lucy Alexander: It's funny. I've been in supply chain for 20-plus years, I think—I'd have to go back and do the math—and you're right, back in the day, people ask what you do, and you would say supply chain—in fact, I didn't even use the phrase “supply chain.” I would just say “operations,” or sometimes “manufacturing,” because to your point, nobody really knew what was supply chain was. And then as you very accurately said, over the past couple years, with the effects of a pandemic, I think supply chain has now become a phrase you can hear on the evening news that maybe no one ever really talked about before. I think it is helpful understand what that phrase actually means, what a supply chain is, and why it ends up affecting all of us. A supply chain, to give it its probably textbook definition, is a sequence of processes or activities needed to supply a good or service.

0:04:04 The word “sequence” here is important because things do have to happen in a certain sequence in a supply chain. If you think about a typical medical product, drug, some typical processes, or sequence of processes that would happen, to give an example, are the manufacture of

the medicinal product itself, something we frequently call “bulk,” because it might be tablets that we all know and love; it might be a liquid that then goes to be filled into a vial, as an example; or we make a lot of products in prefilled syringes; we make a lot of respiratory products where it ultimately goes into an inhaler, in some cases a device, as well. That, then, has to go to typically another manufacturing site where it gets put into what we refer to as primary packaging. So, you think about things that come in a pouch, as an example, or maybe a bottle in the case of tablets, and then things have to go into what we call secondary packaging, which is then a cardboard carton, as an example.

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All of your listeners I know are familiar with what comes out of the end of the supply chain, because if nothing else, we are all consumers at the end of the day. When you go and pick up your medicine from pharmacy, or you get it from a hospital setting or someplace else, that is what the supply chain does, is it has taken everything from all the raw materials, all the way through all these sets of processes to get the drug to the patient.

Rich Bendis:

Then basically, some new challenges emerged during the pandemic that maybe weren't as precedent prior to the pandemic that created challenges for people on a global basis. Talk a little bit about what happened that made it a little more challenging to go through the supply chain at that time.

Lucy Alexander:

Yeah, it's interesting. I think the challenges have always been there, and they say that as someone who has a lot of gray hairs—[laughs]

Rich Bendis:

—at least you have hair.

Lucy Alexander:

[laughs] Yeah, right. I should count my lucky stars, huh? [both laugh] So, as I said, I think they've always been there.

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One of the things that happened during the pandemic is it was unprecedented. There was the great flu of 1918, and as someone who came out the infectious-disease space, I spent a lot of time making comparisons and learning more about our history with infectious diseases and pandemics, but 1918, in some ways, was quite different from today. Certainly if you think about it from a manufacturing and a supply-chain perspective, in many ways it was very similar. We know that a lot of the

advice in 1918 was very similar to the advice we got in the most recent COVID pandemic, but some of the things that happened as a result, or along with that, was, we know that, of course, if we all think back to early 2020—and even earlier than that, if you look at China—another aspect of supply chains is they are typically global, so you have to manage dynamics in different regions at any point in time. What we experienced was, first, we saw the impacts in China, and as we all know, China took a very stringent approach to control the pandemic.

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Everything shut down, and we all experienced that at different points during the pandemic, but what that meant was, at manufacturing sites, it was difficult for them to operate. There were different kinds of materials. They didn't want trucks going in and out of China because they were worried about spread. We take that for granted that if we're manufacturing a product in China, as an example, or anywhere in the world, at some point it has to get on a truck to be moved to a distribution center so it can then be shipped out to pharmacies, and that became challenging too, just moving product around.

Then coming out of the pandemic, we've seen a lot of supply constraints. One of the things that's happened is that, it's very important when you're managing a supply chain, to keep everything in balance. Everything has to be synchronized. There's a phrase in supply chain about a bottleneck. The bottleneck is the place in your supply chain that kind of can't keep pace with the rest of the supply chain, so you have to manage that very carefully because otherwise it slows everything else down.

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Again, using my example earlier, you can make lots and lots of product and medicine, but if you can't keep up with filling it in the vials, as an example, then that becomes your bottleneck, and it doesn't matter how much you produce or how much you can stick into cartons, if you can't get it filled in the vials, then that's going to limit how much product you can make available. So, it became very difficult to keep everything operating in sync with all this chaos going on around the world. Coming out of the lockdowns, everything was out of balance. It's taken different parts of the world different amounts of time to get ramped back up again. We've seen material shortages that also happened during the pandemic, so a lot of effort has gone in to managing those, finding new materials,

finding alternate materials. Another problem we had was—and this is one that didn't even occur to me, even with all my years working in supply chain—but, when any company moves product around the world, frequently it goes onto cargo ships, and to put the material on the cargo ships, you put it into a shipping container.

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And people are probably seeing shipping containers; they are these big rectangular metal things. You see them piled up at ports. You sometimes will see pictures of them on a cargo ship, or sometimes they also get booted on the trains, as an example, and those actually became a short supply, not necessarily because there weren't enough of them, but because they were in the wrong places in the world, so the ports became very backed up. People may recall the images of ships just sitting anchored outside of ports around the world, because then people couldn't get drivers to then take the stuff from the ports to typically warehouses in the country. Everything just got really out of sync, and that becomes very, very problematic from a supply-chain perspective. You think about a supply chain as a big machine with lots of different cogs, and those cogs all have to knit together and rotate in parallel, and if one of them gets off, then it upsets the whole thing, and what I think we've seen is a lot of those cogs having difficulties and challenges.

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Getting everything lined back up again and working together smoothly has been quite a challenge, and not just for the pharmaceutical industry, really all industries. I know friends who have thought, “Oh, this is a great time to redo our kitchen!” Well, yeah, but it takes six months to get a washing machine or stove, whereas normally you would just order it and it would show up the next week. So, yeah, it's definitely been a challenge globally for pretty much every industry.

Rich Bendis:

You bring up a good point there because, say, iPhones, automobiles, even lumber, and other things that really were in short supply—but the BioPharma industry probably has some nuances that some of the other commercial industries or consumer industries don't. What do you see as the challenges that are unique to the BioPharma industry related to supply chain versus some of the others that are primarily involved in consumer products?

Lucy Alexander: Yeah, that's a great point. I actually started my career in consumer products with J&J, so I've had the experience working across.

0:11:00 One of the distinct differences is the regulatory and quality standards that we have in BioPharm. Our products go into human bodies; they get ingested, or however they're administered, so as we all know, we have very high quality standards. A lot of it is sterile manufacturing, as an example. We have to be very careful to keep the product sterile. A lot of it is what we call in the supply-chain world, we refer to it as "cold chain." That means products that have to be kept cold, so yes, there are products—grocery products, as an example, chocolate is another example, when people are moving it around and it has to be kept within a certain temperature—but it becomes even more critical with medicines and drugs, because as we all know, if a product goes outside of what we refer to as its validated temperature range, then it creates concerns for safety and efficacy, which of course is what we are always looking to deliver. There is a lot more precision, I would say, required frequently in the pharmaceutical industry, compared to some of the others.

0:12:01 And again, the regulatory piece—I'm sure most of the listeners are aware that everything we do is part of a filing to regulatory agency someplace, a health authority, and as we all know, that's what's required for a medicine to be approved for distribution in any particular country. It's all done in these voluminous documents. They include clinical trial data; they include specifications; they include the validation. So, everything we say around how we control temperature, how we manufacture the product, all of that, we have to have shown that we have validated that going through a fairly specific process and expectations that the health authorities have, so that we know that every time we turn out a dose of anything that we're making, we can guarantee that it is to the same standard as every other dose that we have put out. As we all know, if the slightest little thing goes wrong or causes us to have to deviate from those processes and the standards and everything we have in the regulatory filing, then we can't really set product.

0:13:04 Sometimes we can work through it from a data perspective, but there is a lot of complexity. There are a lot of things that can happen along the way. Just to use the example of cold chain, if a shipment gets held up

someplace—which can happen because the customs people aren't working on the day when we're expecting to import it, or a ship has a problem along the way, or the port is backed up, as another example—then that product has to sit for longer in transit than we would expect it to. Then we have to make sure we're able to maintain the temperature, and that's not an easy thing to do. [laughs] So, there's a lot of complexity in pharmaceuticals that I think you don't see to the same extent, potentially, in other industries.

Rich Bendis: I think the other challenge that exists for people in all product categories is, how do you have the right amount of product at the right time when the ultimate customer needs it?

0:14:00 That's really looking at your raw materials, your finished goods—how much do you have of each different product in your warehouse based on what your projections are? Your projections are just that: they're projections. How do you do the balancing of all the raw materials, finished goods, and location of where they are to make sure they match what the market needs are so that you don't have these big lag times? Even if you don't have a pandemic you're dealing with, we're just talking about every day—how does AstraZeneca balance their traditional needs to meet the market demands on time?

Lucy Alexander: Yeah, that is a never-ending challenge, to your point. That's why there are jobs in supply-chain management and there are degrees in supply-chain management. There are four-year degrees you can get, and certifications, because, yes, exactly to your point, this is the essence of what supply-chain management is. So, yeah, absolutely, in my opinion, it really starts with, to your point, a forecast.

0:15:00 There are techniques that we can use in supply chains and supply-chain management to do this, and one is around forecasting that demand, which I personally find a fascinating space, particularly with BioPharm products, because there's lots of variables in demand. You would think for certain chronic conditions, “Oh, well, there are people who have hypertension.” Okay, well, we could figure out how many people have hypertension, and how many people are going to get scripts for medicine, and you just kind of do the math. There you go. Turns out it's not that

simple, even for sort of chronic disease states, so there are many variables. One is the actual incidence of the disease, which can change, and again, in the pandemic, we saw lots of variability in that, because it's not just the incidence of the disease, but it's also when and how it gets diagnosed, and one of the unfortunate things about the pandemic was, as we know, access to health care was more difficult, so some people didn't actually get diagnosed, and they were now seeing people come in and those diseases progressed, unfortunately.

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So, the rates are a little bit hard to forecast and predict, and then it really depends on the treatment decision made by the physician. Then let's say that somebody is prescribed a drug for their condition—then a lot of people actually never fill their prescriptions, which is unfortunate, and then if they do, then they go to the pharmacy, they get it filled, and the pharmacist can make a decision in consultation with the patient not to give them the actual medicine that's been prescribed, but another very similar medicine. It's called substitution. That happens too. Then the patient gets home with the medicine, and it's prescribed on a certain regimen, and they may not take it to that regimen. They may take less, which happens frequently. They may not go back and get the refill prescription. So, it's actually a little bit difficult to think about that demand, and then if you suddenly get an approval someplace in a market that you can have an approval on before, you open a line of sight to that, but it's sometimes hard to predict when exactly that's going to happen. So, just in that forecasting process, there can be a lot of intricacy.

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And then your point, you take that data and you put it into a plan. You plan out how much of whatever process the different nodes in your supply chain—you plan out how much they need to do, on typically a monthly basis or whatever the time frame is, and again, you think it's very simple. You just do that math. But then things happen. Demand can change. A supplier can have an issue. Manufacturing equipment, even with the best of maintenance, sometimes it breaks down. We have climate events that happen—hurricanes, earthquakes. We're seeing, obviously, this situation in Turkey and Syria right now. Geopolitical events, you name it; pretty much anything and everything can and will happen.

I've got some great stories about how we went through all of this, and we

got the product onto the truck, and the truck was going from California to New York, and you would be amazed at the random things that happen to trucks as they are moving around the planet—things I never would have imagined. I've literally had trucks drive off bridges. I had a very unfortunate incident where one of the drivers in my trucks had a heart attack on route, because he's human; he has health needs too.

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So, you really just never know. I had, once, one when they had to go through a weigh station, and the truck fed into the weigh station, and it came out as being too heavy to go on that road. We've seen weigh stations when you're driving up and down I-95 here in the East Coast, as an example. Well, it turned out he brought a buddy along with him for the ride, so there were two people in the truck when there was only supposed to be one! So, anything and everything can happen, and as you say, that is the job of supply-chain professionals, is to try and anticipate the things that can happen. So, we do a lot of risk evaluations. We do them when we're setting up supply chains. We actually assess—and there are statistical models to do this that we use—assess risk in different geographic locations, different routes, all kinds of things. We spend a lot of time with our suppliers and our manufacturing sites understanding things like, how much capacity they have, how many units per minute, per hour can they produce off a certain manufacturing line?

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Do they have other manufacturing lines that they can use in the event that they have a problem with one? Because, again, even with the best maintenance, things can break. Labor availability is another one, so how you plan your shifts. Are you running one shift a day? One eight-hour shift a day? Do you run two eight-hour shifts a day? As we all know, you sometimes have a 24/7 operation where you run three eight-hours shifts a day, and then your manufacturing around the clock. So, all of that comes into it too, but that all requires hiring. Human beings aren't just a switch that you turn on and off, so if you decide you need to add a third shift because you need more manufacturing, you have to go and hire those people, and we know, particularly in the recent months, hiring has been quite challenging. And then you have to train them! Again, we work in a highly regulated environment, so people have to understand how to work the equipment. They have to understand the health and safety

requirements of all this. Gowning is actually a really big deal in manufacturing environments, so how people put on gear to make sure that there's no opportunity for anything to get into the product that shouldn't be there.

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All of that gets managed by an army of people. We're looking to the future in that regard, too. I can certainly speak for AstraZeneca—we are making a lot of progress in terms of how we digitize all of this. We've always used, obviously, information systems to manage this, but with the new technologies, we're starting to use artificial intelligence, as an example. We have massive amounts of data, and if you think about everything I talked about from the raw material supply, the active pharmaceutical ingredients that come in, our manufacturing processes—we also have analytical testing that I haven't talked about, so this is all the testing that needs to happen on the product at all the stages throughout the production process to make sure that it is what we expect it to be, and those are, in many cases, very complex. So, all of that needs to happen. All of it needs to be managed, and as I say, there's a multitude of things that can happen that you don't expect throughout that entire end to end.

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Rich Bendis:

The other thing, when I was looking at your background, Lucy—and I'm talking to Lucy Alexander, who is basically the Capabilities Lead and Global Supply Chain and Strategy Lead for AstraZeneca here in Gaithersburg—it says you have a network of 600 employees worldwide focused on the supply chains, so when you talk about being here in Gaithersburg, you're not just focused on what's happening in the Gaithersburg facility or in Maryland, you're involved in everything that's happening throughout the world in supply chain. Is that for all products, or just the products that are coming out of the Gaithersburg and Maryland area?

Lucy Alexander:

Yes, I am part of the AstraZeneca Global Supply Chain and Strategy Group, which is truly global. We have people based in multiple countries around the world. We have a logistics network as well, where we have people actually in country, so—I can't remember exact number off the top of my

head, but dozens of countries around the world. So yeah, when we talk about the 600 people, that is, as I say, they are scattered around the world.

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In many cases, we try and have them as close as possible to our manufacturing sites, as an example, or some of our largest markets, so we have people in China, as an example. We have a team in China. Sweden—I think people are aware that AstraZeneca is an Anglo-Swedish company originally formed from the combination, the merger of Zeneca, which is a UK-based company, and Astra, which is a Swedish-based company. So, we have large sites and teams in Europe—in Sweden and the UK; and here in the US, here in Gaithersburg, as well as in Wilmington, Delaware. Then we have manufacturing sites around the world, so our supply chain team interacts with not only the—I think it's about 24 manufacturing sites that AZ has globally, but also, we have a network of contract manufacturers, CMOs, who are contracted to AZ to produce products for us. So, yeah, it is a very large network that we work with.

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Rich Bendis:

I would imagine another challenge is one of the things that AstraZeneca is a global leader in, and that's sustainability and the greening economy. Talk a little bit about the impact of having sustainable economy and sustainable products that don't impact our environment, and how that plays into your supply chain management.

Lucy Alexander:

This is actually very exciting. I'm very excited about what AstraZeneca is doing in sustainability. We have taken a leadership position in the industry through our CEO, Pascal Soriot, and the formation his leadership of something called the Sustainable Markets Initiative, which is a combination of companies focusing on how we can reduce environmental impact. So yeah, we got a number of things going on. We have a corporate objective to be carbon negative by, I believe it's 2030; it might be sooner than that, and that's not just AstraZeneca ourselves, but again, back out to our supply base. So, we have developed science-based targets for carbon-emissions reduction, not only for ourselves and our sites, but also working with our suppliers to have them develop and hit those targets as well.

- 0:24:06 We are involved in a number of different environmental efforts around the world, things like reforestation and planting trees. We are also looking at the use of biogas, sustainable fuels in our distribution network. In fact, we have a very exciting program going on with our logistics organization around how we can reduce the number of shipments we make by optimizing how we do that. We know these lessen environmental impact when we ship products on the ocean rather than by air. A lot of product actually does get shipped—particularly in biopharmaceuticals—does get shipped by air for a variety of reasons. Again, it has sometimes to do with temperature control. There's a number of reasons why, but we know that the environmental impact of an airplane is more than if we can ship. We can put lots and lots and lots of product on a single cargo ship.
- 0:24:58 So, we're also actually one of the leaders—we're in the top quartile—for the amount of product that we ship by sea rather than air, and we are continuing those efforts. We have even higher targets to continue to do that. So yeah, there's a lot going on in sustainability. It makes me feel very proud, honestly, that AZ has taken this so seriously and really has, as I say, established a leadership position with some very ambitious targets. We have some of the most ambitious targets, actually, certainly in the healthcare industry, but as well, working with other companies and with our supply base to implement those targets as well.
- Rich Bendis:** You can be proud to be with a company that's trying to set the standard rather than be a follower, and actually be a leader within your industry. You're one of the top global BioPharma companies, and you can have a tremendous impact just with the philosophy that you develop and adopt for your company.
- What I'd like to do is—we've been talking about global supply chain—I'd like to get a little bit more down to local supply chain and talk about the BioHealth Capital Region.
- 0:26:01 Since you're one of the largest—you are the largest BioPharma company within the BioHealth Capital Region—let's talk about supply chain and what kind of an impact you can have in stimulating our local economy in our backyard here.

Lucy Alexander: Yeah, I believe we are one of the largest life-sciences employers, I think, in Maryland. We have two major sites here in Maryland: we've got one of our strategic R&D centers here in Gaithersburg, which is actually where I'm based, as well as we have a manufacturing site in Frederick, a site that I actually have spent a fair amount of time in, because we manufacture a large number of our products there, particularly our biologics products. Yeah, I think I was told that we employ something like 4,700 people in Maryland. That's just the AZ employees. We also work with testing labs in the area, and again, I've had the opportunity to do that throughout my career.

0:26:54 It's always nice, honestly, when you can go to a local supplier, because as much as we all know that we've gotten really good at working virtually and working globally, particularly in the past two or three years, there's nothing like just being able to go and have a face to face meeting and really establish that connection. So as I say, we've got fairly significant amounts of activity here, and we like to work with suppliers locally. Another way we've been involved locally is through spinouts. Again, this is one of the areas where we work particularly with BioHealth Innovation. This is actually very near and dear to my heart because in the spinout of the Viela Bio company a few years ago, it was one of the companies I actually supported, so that was a lot of fun for me. As you know, we had some very promising molecules in development in AstraZeneca, so we spun those out with some of our employees into a separate company, but because the development had been taking place within AstraZeneca and we've developed manufacturing within AstraZeneca, we actually continued to assist Viela through the final stages of development and the manufacturing and supply of those products, which I got to do.

0:28:02 So, that was a really exciting new experience for me. We had the Viela Bio company, which actually, they had space at our site for a while, and then were acquired by Horizon Therapeutics not too long ago, so I consider that a real success story. I got really excited about that because for one thing, these are molecules that can make a significant difference in patients' lives, and by spinning them out from the company, they went all the way through, and those products have now been approved and are being used by patients, so that's really exciting to see. Again, it's nice

when it stays sort of close to home as much as we are global, to your point, still it's nice to see colleagues on a day-to-day basis.

Actually, there are lots of companies around here. There's a whole MedImmune/AstraZeneca sort of alumni group, I guess I'll call it, because a lot of the people who maybe started at MedImmune back in the day here in Gaithersburg and AstraZeneca have gone out to other companies here, so that's always exciting to see.

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We're always sorry to see them go, but we maintain relationships with people, and it's great to have all those personal connections amongst the companies here in this area as well.

Rich Bendis:

Yeah, I think MedImmune and AstraZeneca has been one of the best incubators we've had for spin-out companies to come out of—comparable to coming out of NIH, or coming out of a major research university. If you look at the top ecosystems around the United States, it's taken a little bit longer for it to happen, because we really only had Human Genome Sciences—which is GSK—MedImmune and AstraZeneca, to really build upon in this ecosystem. But really, we've evolved very quickly over the last 10 years, and everybody's trying to be like a Silicon Valley, but basically Boston, San Francisco, San Diego, Research Triangle, I think we're holding our own now.

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What's happening is we're getting these serial entrepreneurs who've come out of the larger companies doing these spinouts, sometimes with the science that was in the parent company of AZ, like Viela that spun out, and creating these new companies for our ecosystem, which is really exciting to see that happen. Even though it's taking a little bit longer, one of the neat things about our region is we've got a nice quality of life. The cost of doing business here is a lot less than it is in some of the other major markets. And the other thing is, just like you coming back, it's easy to attract people back into this ecosystem because you don't have to contend with some of the issues that you do in some of the other major markets like Boston, San Francisco, and New York. So, I congratulate AstraZeneca and MedImmune for what they have done within our region.

If you were a local, small business here in the BioHealth Capital Region,

it's not easy to make introductions to big companies that they want to do business with. What's the best way that a local supplier can identify what your local supply needs are, and how do they get engaged with trying to work with an AstraZeneca?

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A good starting point is probably the AstraZeneca.com website, and then you can see there the therapy areas that we're in, some of the products we're developing. There's a lot of information out there, so I think if you see something that you think would be potentially a good fit, then you can start there. There should be contact information there to reach out. I would offer myself up, but I know I already am not good at keeping up with all the emails I get, so if send something to me, it's probably going to take me a long time to get to and figure out where it needs to go, so I would recommend going to the AstraZeneca.com website.

We do have events here from time to time for suppliers, so maybe keep an eye out for those as well. I think those are some good starting points, and if you see something, and say, "Oh, this could be a great fit for my company or my business," absolutely reach out and let us know, because we're always looking for great suppliers and partners.

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Rich Bendis: Well, this has been very educational for me because this is my first tutorial in global supply chain, Lucy.

Lucy Alexander: Now you know everything there is to know! [both laugh]

Rich Bendis: I know everything that we've discussed over the last 40 minutes, for sure, but it's nice to be able to talk to somebody that has a global perspective on this, as well as someone with a company that's so critically important to our region and to the ecosystem in which we do business in. Is there anything that we didn't cover today that you would think would be important for our listeners to know or learn about?

Lucy Alexander: I probably told people as much as they really ever wanted to know about supply chain, but I would say, if anyone is listening and is interested in a career in supply chain, please do reach out again. We're always looking, whether it's supply chain or something else we do here in Gaithersburg or

Frederick. We're really near around the world. Again, we have job postings on our website and always looking to bring in talented people, and as you say, it's one of the nice things about being where we are here in Maryland, is there are so many just amazing talents.

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We've got so many universities around here, so many other companies. We've got NIH. We've got the government agencies. It really is a very rich place to be, so definitely, if anyone is interested, please let us know.

Rich Bendis:

One last thing when you're talking about job openings, what types of jobs would you be looking to fill currently that might be on your website that you're looking for that would relate to supply chain? What kind of skill sets and educational backgrounds would they need to be qualified to come into supply chain?

Lucy Alexander:

In our supply chain organization we have, we're working up and doing, I think it's about seven different functional areas, which all do slightly different but related things. One is our planning space: these are the people who take all the data I referenced earlier and figure out what that plan looks like—what that supply plan looks like, and then figure out what are the variables that can happen. There are degrees in supply-chain management that some people have, or people may have just had experience doing that. Again, that particular discipline applies across all industries.

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We've had people come in from sugar manufacturers, from a huge variety of different industries. Consumer products is another one. As I was saying earlier, I actually started in the consumer products division of Johnson & Johnson, then moved into pharmaceuticals later, then moved into biologics after that. So, that's one. We also are always looking for people who do strategy, so if you are in a role on strategy, we have people who do our supply strategy for our products as well as manufacturing-network strategies. If you have manufacturing or engineering experience, that's always something we're looking for, too. Project management is another one. Those are probably a lot of the primary ones.

I run a Lean team, so this is the use of Lean-manufacturing principles across our supply chains, and I actually have open positions right now, so

if anyone is listening and you have a Lean Certification or Lean experience, definitely take a look at that. But, yeah, in terms of how you develop skills, certifications are, of course, a great way to do that. So again, project management certifications, PMP.

0:35:00

There are certifications in supply-chain management that you can get. An organization called APICS is an example that offers certification, which is one that we frequently sponsor for our people—Lean Certifications. If it's not an area that you necessarily have experience in, there are definitely ways to get that.

Rich Bendis:

Well, that's been extremely eye opening, and I think there are probably some people listening that might—you might get some resumes, which is great. By the way, we do have a job site on the BioHealth Innovation jobs board, so anything that you're recruiting for, feel free to send us those jobs, and we can get those posted on our job site as well.

Lucy Alexander:

Fantastic.

Rich Bendis:

This has really been a great podcast, Lucy, because it's the first time we've done anything on supply chain. Definitely I think our listeners have gotten more educated on how important it is to our whole life and our whole global ecosystem that we do business with every day. I have enjoyed working here with Lucy Alexander, Capabilities Lead, Global Supply Chain and Strategy with AstraZeneca. Thank you, Lucy, for being on *BioTalk*.

0:36:02

Lucy Alexander:

Yeah, thank you! It's been a lot of fun. I appreciate it!

Narrator:

Thanks for listening to *BioTalk* with Rich Bendis.

End of recording