

Steve Lewis 00:09

Welcome to Speaking of Mol Bio, a podcast series about molecular biology and its trending applications in the life sciences. I'm Steve Lewis and joining me today in the cohost's chair is Rachael Stanek, molecular biology solutions provider at Thermo Fisher Scientific. We're excited to share a conversation with Saboor Hekmaty, Director of Laboratory Operations at Avrok Biosciences. Saboor's team at Avrok works with a wide variety of molecular biology applications and we had a great time learning from him about companion diagnostics, next gen sequencing, and so much more. We hope you enjoy the conversation. We begin by asking Saboor about his rich scientific background and his current role at Avrok.

Saboor Hekmaty, MS 01:01

Myself, I am a molecular biologist by trade, I spent some time in biospecimen processing. Spent some time in tissue culture work. Extended out to next generation sequencing and I landed here at Avrok Biosciences. It's an organization based out of Los Angeles. We're a full-service CRO, and we cover everything from biospecimen processing, biobanking, specimen acquisition. We deal with, you know, other clinical studies such as, you know, IRB-related studies that require patient recruitment. We do sample analysis here, Kind of a little bit of everything. We're kind of like a boutique CRO that kind of fulfills client's needs, very customized, custom tailored for each project that we're working on.

Steve Lewis 01:57

That's fantastic. We're really excited to dig in. right off the bat, why don't you tell us a bit about what molecular biology services that you might offer, whether it's cloning or, or otherwise?

Saboor Hekmaty, MS 02:12

Absolutely. We have, you know, some contracts where individuals are interested in a particular rare disease sample, and they're interested in us acquiring those rare disease specimens for them. So, we do have IRP studies in place where we can, you know, consent individuals, enroll them into the study, process to biospecimens, and store them in our biobank that we have here on site at Avrok. And then there are other types of services that we offer for individuals who are interested in a particular custom panel for next generation sequencing, we can offer it both research and clinically. And then there are certain individuals that we work with that also tell us, you know, we have a direct-to-consumer model, and we're looking to build out with you to, you know, cover everything downstream of, you know, marketing. So essentially, they'll have a specimen that arrives here at Avrok, and we process the specimens for them, we store them for them, we perform any forms of analyses. And luckily, with our strong development team that we have here, we essentially can tie into just about any software tool that you're using as an end user, to kind of complete that real, you know, custom feel, seamless workflow.

Steve Lewis 03:29

Rachel, what makes CROs unique?

Rachael Stanek 03:32

I think one of the really big things that makes them unique, and Saboor got it out a little bit, is how nimble they have to be, you know. Science is a really changing industry. But especially when you're in a business model as a CRO, where not only are you adjusting to the trends in science, but you're also kind of adjusting to you know, what your customers in your specific region want. Also, with other CROs on the market and how are you going to differentiate yourself from those other competitors?

Steve Lewis 03:58

Those are really great points. Saboor, do you have any experience in the CDMO space or any partners that you work with there?

Saboor Hekmaty, MS 04:05

Yeah, we have a wide range of partnerships, and they've ranged from working with pharmaceutical partners who are interested in a specific type of endeavor. And then other partners that are not really interested in the therapeutic space but are really interested in trying to provide services to end users. For example, there may be some individual who's sitting at home and is interested and just saying, "Hey, why not? Let's just run this assay, because I'm curious to know, just for myself, right." And so, we cover both niches, I mean, we do have the regulatory means to go above and beyond with regards to, you know, FDA-level compliance, taking care of, you know, compliance levels to CLIA and CAP accredited models. But at the same time, you know, we don't shy away from endeavors that are purely research, fun to know, types of science.

Steve Lewis 05:12

And I'm sure the regulatory frameworks are difficult to be compliant with, right?

Saboor Hekmaty, MS 05:19

Absolutely. We're lucky and fortunate to have a team of regulatory individuals who keep us on the straight and narrow. To say that they're involved in almost every discussion that happens here and, you know, irrespective of a business model, it's science first. Which is very important.

Rachael Stanek 05:42

I think it's super interesting. I was going to ask Saboor, with all of these different hurdles you face, what's kind of one challenge you didn't really think you would face when you first entered the world of the CRO?

Saboor Hekmaty, MS 05:53

I'd have to say that one of the bigger challenges that we deal with on a day to day is the varying type of projects that we receive. So, we do receive services that can range something as simple as "I want to detect this infectious disease," to, "we're trying to develop a therapeutic, you know, drug to combat X infectious disease, or a particular illness." And so, for me, I find the biggest struggle is putting on different hats to kind of address what we need to address. But for the most part, the one thing that I really appreciate with our organization, and with the individuals that are here at Avrok, we don't force the shoe to fit. I've mentioned to individuals that contract research organizations, they take on a lot of endeavors. And it is important to offer a wide range of services. But I give the example to everyone. If you go to a diner, you can find hundreds, a couple hundred options on the menu. But you're never

going to have a really good steak at a diner. And so, the question you have to ask yourself is, do you want to offer everything and just do it in a very mediocre manner? Or do you want to offer a few, or a subset of services, but really do a good job?

Steve Lewis 07:17

Rachael, in your experience and travels, do you find that being a very common perspective and business model in the contract space?

Rachael Stanek 07:25

I think so. I mean, as a CRO, so much of the work you do is held up by the products and the services you deliver. So, you want to be able to keep that, you know, trust in your brand, and that kind of recognizability and that standard of quality really high, just so that as people, you know, consider you for future projects, you want to make sure what you're doing, you're doing really well. And I think part of science is we're all interested in so many aspects, and there's so many cool things that are happening, and you want to be involved with all of it, but sometimes that's just not practical.

Steve Lewis 07:57

Saboor, can you tell us about one of your more challenging projects, overall?

Saboor Hekmaty, MS 08:07

I'd have to say, we currently are building out our workflow to accommodate companion diagnostic assays. It's something that's definitely, there's a huge demand for it. And, you know, the regulatory means the build out for that has been, it's definitely been strenuous. But it's something that we definitely don't shy away from, I would say that's probably the heaviest lift at this time.

Steve Lewis 08:35

Can you explain a little bit more about companion diagnostics?

Saboor Hekmaty, MS 08:40

Absolutely. Companion diagnostics, in a nutshell is, essentially you test an individual and if they fulfill a certain criteria then they qualify for a particular treatment. And so, they have to go through FDA approval. Anytime the FDA is involved, it's really strict. And it's definitely an uphill, in essence, because it requires an entire infrastructure built. And these companion diagnostic workflow, they can take anywhere from, you know, three to five years from start to finish. So, you definitely don't want to get to year four and say, "Hey, we forgot the biggest piece of the puzzle."

Steve Lewis 09:27

Rachael, what are some of the challenges that you've seen in that greater world of CROs and laboratory operations?

Rachael Stanek 09:36

I think Saboor really nailed it with making sure that you're planning ahead. I've seen a lot of different organizations all across the regions, kind of get to that final point and as you know, the FDA is going through its filings, you know, things can be highlighted that you weren't expecting. And trying to do all of

that retroactively is one, just not as easy. And two, it's way more stressful because your deadlines are still there, you're still trying to get to market, you still have all the pressure you have before, but now you're taking on a whole load of trying to go back and revalidate things and get paperwork. And that's why it's so important. And we try to talk so much with our customers about transitioning, even from research use only products to, you know, more products that have in lines with, you know, rights for service and rights to use commercially as well.

Steve Lewis 09:36

How do you, how do you bridge that gap?

Rachael Stanek 09:40

Once again, early conversations go better, just as you know, as much as you can get ahead of it, and kind of really trying to highlight the fact that, you know, we're not trying to come in and be scary and say, "You can't use our products that way." You know, we're really just trying to provide the tools and make sure that, you know, customers don't get into situations where you know, you're at year four, and you're having to go back and do all that validation. And really just supporting, you know, that's what all of the reps at Thermo Fisher really are out to do is just support their clients, you know, we want to see everyone succeed. So, making sure we lay that framework and that groundwork for that to happen. Saboor, we've talked about some, you know, services and opportunities that were challenging. Are there any kind of projects you've worked on that you know, have been your favorite over the years? Or got you really excited about what you were working on?

Saboor Hekmaty, MS 11:11

Um, you know, I'll be very honest with you, I'm excited about anything really molecular biology driven. This really just, it was early on in, you know, I wasn't really privy to molecular biology early on in the years. I had a classmate at the time, that was always, you know, in my university years, and she was always "Molecular biology, this and molecular biology that," and I said, "Well, you know, let's just take a course and see what it's all about." Lo and behold, I changed my complete educational path. And it really just, it started with that one course. It was an intro to molecular biology course, and anyone who takes it, it's just eye opening. And you just see the world and life in a totally different regard. You know that excitement just continued on and, you know, I had early professors that were, they did a great job in really shaping me to who I am today. And so, ever since I just, I think if its molecular biology driven, I love it. Over the years, I will say that it's been more exciting in molecular biology. One of my professors she was a molecular biologist far before my time and she had mentioned that molecular biology was just painfully slow. She was working on protein separation and using resin columns to do column-based, you know, protein purification, and she told me, "I couldn't do it anymore." And now, you know, I still keep in touch with her. And she's like, "You love molecular biology?" And I said, "Well, I love it, I've always loved it." And I said, "The technology is really caught up." You know, where molecular biology is today versus where it was 10, 15, 20 years ago, it's just a different world. It's really exciting to try out those new technologies. And, you know, Thermo Fisher has been great in keeping us, you know, in the loop with all the newer technologies that are available. So, I'd say that there's really not a particular project that I'm really excited about, I think, just being in the space, being able to communicate with scientists on a day to day and really just keep up with everything that's going on in the space has just been exciting and rewarding in and of itself.

Steve Lewis 13:36

What are some of the new technology trends?

Saboor Hekmaty, MS 13:39

Yeah, I mean, you know, next generation sequencing is nothing new by any means. It's been around, you know, for many, many years now. But I think it's just the accessibility of next generation sequencing, that's been very, very exciting over the years. Yeah, it's things that we used to use 10, 15 years ago, for example, you know, even protein purification using those resin-based columns has turned into this really, they have nifty instruments now, that can perform that for you in real time. So, it kind of, it eliminates the need for you to sit over this column, eight hours out of the day. You can set it, forget it, walk away, come back, and just really focus on the important stuff. Not to mention, you know, all the robotics, liquid handlers. That's really been the fun part of all of this. It's just really using those new automated instruments. Using the sequencers. Because sequencing has become more affordable over the years, more people want to include it in their studies. And it's really the tried-and-true method. And I think over the years, we're definitely going to see a lot more assays being developed in the next generation sequencing world.

Steve Lewis 14:49

Do you all do anything related specifically to PCR and cloning as well?

Saboor Hekmaty, MS 14:53

We do. We do quite a bit of work in the PCR space. We don't deal with cloning ourselves. Luckily, we do have, you know, Thermo Fisher. They've been just absolutely phenomenal in being a pillar to our organization and supporting us and a lot of the research that we have. I have a lot of strong working relationships with my Thermo Fisher reps, you know. And it can be something as simple as I've had a discussion with a client, and we're just trying to understand, you know, what really is available, what resources that we can combat. I've been actually using them just kind of as a support system, you know, maintaining a relationship with Thermo Fisher, and if they're aware that, you know, science is kind of going in a particular direction, before we're even getting there, you know, those assays are kind of built out and ready to use. And with the global reach of Thermo Fisher and their ability to control supply chain bands, that's just something that you can't find with a lot of these organizations.

Steve Lewis 16:01

We hope you're enjoying this episode of Speaking of Mol Bio. We wanted to take a quick moment to remind you about the Invitrogen School of Molecular Biology. It's a great educational hub for molecular biology, with rich and reliable technical content designed for new and experienced molecular biologists alike. Check it out today at thermofisher.com forward slash I, S, M, B. And now back to our conversation.

Steve Lewis 16:33

What are some of some of your favorite areas, or domains of molecular biology?

Saboor Hekmaty, MS 16:38

I particularly enjoy next generation sequencing and PCR-related assays. That's really the bread and butter. The basics, you want to call it is PCR. But next generation sequencing to me is the most interesting. You know, I will say that, for better or for worse, post-pandemic there's been a lot of interest in individuals wanting to generate data and generate it really quick. And so, I find that, you know, throughout the pandemic, a lot of individuals kept referring to real time PCR, as you know, the gold standard. Real time PCR is a great technology. It is really, really impressive, especially with you know, TaqMan probes there is a lot of improvement to the SYBR-based technology that previously existed. But it was a little shocking to me, where a lot of individuals just kind of looked at it and said, "Well, you know, real time PCR is the gold standard. Why even waste your time with next generation sequencing, which could take a couple of days?" And it was a little hurtful, as a molecular biologist, to hear that. The reason why I say it's hurtful is because next generation sequencing is definitive. For you to say that, you know, PCR will never be more definitive than next generation sequencing. Next generation sequencing, you have this sequence of nucleotides, and you know for sure that what you have there is a particular infectious disease. Yes, TaqMan arrays and real time PCR do a great job. But when you're trying to understand sequence variations, if you're trying to boost your, you know, statistical confidence in the data that really only comes from next generation sequencing. So, for me, I tend to sway towards the NGS side of things.

Rachael Stanek 18:30

Since you got into molecular biology, and NGS is a huge space, do you think there will ever be a technology that kind of eclipses NGS?

Saboor Hekmaty, MS 18:39

Very, very good question. Seeing that the building blocks of life originate back to the nucleotides that we're using, I think there may be an improvement to the NGS sequencing systems that we're using today, but do I think there will be a different methodology, different instrument? I don't think so. In this particular case, we're looking at nucleotides. So, what would be an improvement beyond that? I don't, I don't really know.

Steve Lewis 19:08

Speed, maybe.

Saboor Hekmaty, MS 19:10

Speed for sure. I think Thermo has done a fantastic job, at least with their new sequencer, for sure. They've developed the Genexus system, which already has been a pretty big improvement, in my opinion, to the NGS systems that were, you know, previously existing. Currently, right now, with our current workflow, we can go from a sample to a report in about 36 to 48 hours and I think that Genexus gets it closer to the 24-hour mark. Believe it or not, during the pandemic, when we were telling individuals that, you know, 36 to 48 hours will get you a result. We have a phenomenal panel, infectious disease panel that we designed here that looks at 25 upper respiratory viruses within a single assay. And so, the beauty behind it is whether you're interested in SARS-CoV-2, influenza A, B, RSV, or the parainfluenza virus, rhinovirus, human coronaviruses, it's just a single assay. 36 to 48 hours and we'll tell you which one or which multiples you have. And believe it or not, the answer I got was, "So you can't do it in eight hours, not interested." And I said, "Well, to be fair PCR, you know, if you're going to

run all those targets on a PCR panel, number one, it'd be very, very expensive. And number two, you know, with your eight-hour turnaround, you're just getting one or two targets, maybe three, within eight hours." Yeah, it was very sad to hear that 36 to 48 is not, I mean, typically in my experience in the past, this has been five, six days before you get a report. You know, already, I'd say that we're doing it pretty fast. I think Thermo has got it down to 24 hours, and it's fully automated. An improvement to that would probably be under 8 hours. That would be exciting, for sure.

Steve Lewis 21:10

With things moving so quickly, in terms of the field advancing, how do you and your team keep up with current trends and methods?

Saboor Hekmaty, MS 21:20

Internally, we rely on a group of experts. And, you know, luckily for the team that we hire here, we do look for certain sets of criteria for individuals who we are hiring. So, for example, you know, we do want to look for someone who's experienced, but we also want to look at someone who is interested in wanting to, to grow, you know, as an individual. So, routinely the scientists that we have here, they're constantly reading up on new publications, literature that have been published, just to keep up with the new trends. You know, having a good relationship with our reps has been great as well. They're keeping us in the loop with, you know, the new technologies, new instrumentation, assays, reagents that they have to offer. One example of that, I got a call the other day from one of my reps. And he said, "Saboor, I know you mentioned this a year and a half ago, and it's here." And I said, "What's here?" And he said, "Well, we have an extraction kit. Single extraction kit covers every single type of sample you may receive. And it's just one kit." I said, "Oh, my gosh, I have eight versions of that kit in my lab right now. So, are you telling me there's just one catalog number?" And he said, "Done deal." So, we kind of rely on some of that to help us in terms of keeping up with the new methodologies that are available.

Rachael Stanek 22:45

Speaking of the future years, Saboor, what do you think, you know, over the next 5 to 10 years, your own personal goals, and the goals of Avrok as a whole are kind of?

Saboor Hekmaty, MS 22:54

You know, I think about that every day, and I asked myself, you know, for Avrok, we're doing great. We have a lot of great opportunities that are here. And for me, I, we want to build up this organization to, you know, we have a pretty big facility, we're about a 10,000 square foot facility here in Los Angeles. Everything just kind of retrofitted into this wonderful laboratory space. And luckily, with that 10,000 square foot space, we're kind of creating different nooks in each department. You can say we have dedicated space for different opportunities. You know, biobanking has its own world. We have, you know, infectious disease room. We have a separate area to just deal with, you know, processing of blood specimens, PBMC isolation processes, we have our NGS room, we have our PCR room. And so, for me, I'd really love to build out this organization where we, you know, 5x our operation here. Not really for, you know, people like to look at it and from a financial standpoint, and of course, the financial element is important for, you know, the higher ups the you know, within the organization. But for me, it's just walking into the lab and just seeing this well primed machine where just, everyone's just kind of

working on their thing, I think that'll really put a smile to my face, to know that everyone with, everything is working just amazingly. And so, you know, with the automations and implementation that we have in place here if we're at 60, 70, 80 employees, I think that'd be a pretty cool operation to see. Don't get me wrong, it's definitely going to be very, very challenging. I think we'll definitely have different types of things to worry about, but those will be good problems to have.

Steve Lewis 24:41

Rachel mentioned before coming into our interview today that you have a pretty interesting life outside of the lab.

Rachael Stanek 24:49

I think yeah. When I thought about bringing Saboor on this podcast, I think he truly does embody someone who is passionate about molecular biology and has found a career in it but is also passionate about it personally. And has a lot of passions outside of the lab. So, Saboor, can you tell us some of the stuff that you're working on outside of your day-to-day life?

Saboor Hekmaty, MS 25:08

I don't have too much of an outside of the lab day to day life, to be honest. I have a wonderful family, the individual that I was referring to that was always, "Molecular biology, this and that." She is my wife now. So, she is the person that got me to go into the space of molecular biology. So, I thank her for that every day. But it's really the enjoyment that I have, I do tend to bring things home from work. Which I'm, I'm working on reducing that a little bit. But it's really the strategic planning. And for me, it's, it's all about work. And I definitely enjoy discussing that. Luckily, because my wife is also a molecular biologist, we can talk about some of those hurdles at home, talk about some of the challenges in experimental design. So, we have a lot of very meaningful discussions over dinner. Talking about that, I have an amazing daughter, she's five now and she loves the sciences just like we do. So, let's see what, where she ends up in the future, I think.

Steve Lewis 25:44

It's always great when you have a family member in the same area and can discuss things over a nice candlelit dinner in the evenings.

Saboor Hekmaty, MS 26:27

Yeah, it's definitely an interesting one. But it's fun. It is. I get to go home and have a lot of these discussions with her. She is part of the Avrok team as well. She's joined on as a quality assurance member. So, it's wonderful. And she's always reminding me to keep on the straight and narrow. So, it's fun. It's a fun dynamic.

Steve Lewis 26:52

For the last part of our interview here wanted to just ask a bit about your insights for our listeners here. What has been your key to success?

Saboor Hekmaty, MS 27:04

Key to success, one of the items that we look for here at Avrok is reliable organizations that we work with, we do depend quite a bit on our vendors. There could be things as simple as you know, instrument reliability. A vendor that has very good quality control standards. Someone who has control over their supply chain demands. You know, it's really hard to work with a vendor who's sourcing a product, you're offering it to your client, and you can't source it. You know, and organizations that have, you know, a very strong field application scientist team where they can kind of interface with you and let you know what you should plan for in some of these studies. That vendor, as well, depending on, you know, the involvement that you have, you know, by interfacing with, with individuals that were responsible for the development of a particular assay. These are very, very important elements, I think in just vetting a vendor, which has been one of the areas that are a source of success. But another thing that we do here at Avrok is, you know, you have to recognize your strengths and your weaknesses. And I think that that's very, very important that you do so early on. Myself, you know, I do not try to implement any software here at Avrok, because I'm probably the worst person to do that. But you know, we do have individuals, part of our organization, that are phenomenal in that space, who could speak very intelligently. So, it's really just knowing what are your capabilities? What's your capacity? And what's your bandwidth? And just being really honest about that to yourself, right? And overall commitment to projects is, is another very, very important element here. It doesn't really make sense to commit to a project. "Sure, yes, we'll get it done in two months," and then fail to deliver on that. That's something that I see a lot of organizations really trying to do they're forcing the shoe to fit. And then they're saying yes to every outcome and opportunity. But it's really just, you know, being able to set realistic expectations within the organization, realistic timelines, and then achieving those timelines. So, the motto here has always been, you know, "Under promise and over deliver every single time." And, you know, and so long as you're surrounded by the right individuals, part of your organization, as long as the leadership is kind of in alignment with what's happening in the organization, you can really structure yourself to achieve a great deal of success.

Steve Lewis 27:46

And finally, we like to ask all of our guests what is what is some advice that you would give to somebody thinking about entering in the molecular biology space?

Saboor Hekmaty, MS 29:57

Yeah, I think I would definitely recommend an individual, you know, future molecular biologists that it's a, it's a totally different world. It's a very, very different world and it helps you vision and see life in a very, very different way. My recommendation would be that molecular biology is a very, very big topic and world space that you can go into. One of my mentors once told me, "Find a niche, find something that you really like within molecular biology and just stick to it. Really harness that and be the best at it." Right? It doesn't matter really which area of molecular biology that you go into, but just do it because you love it. And be the best at it. You know, really strive for excellence in that field.

Steve Lewis 30:51

Great insight. Thank you so much, Rachel, as our co-host for this episode and for bringing our fantastic guest Saboor.

Rachael Stanek 31:00

Thank you, Saboor, for taking the time today to join us and all of the information that you passed on to us.

Saboor Hekmaty, MS 31:06

Thank you, Rachel, thank you so much for signing me on for this. I had a great time. This is pretty awesome.

Steve Lewis 31:15

That was Saboor Hekmaty, Director of Laboratory Operations at Avrok Biosciences in Los Angeles, California. Thank you to Rachael Stanek, molecular biology solutions provider at Thermo Fisher Scientific, for joining me as the co-host for today. Speaking of Mol Bio is produced by Matt Ferris, Sarah Briganti, and Matthew Stock. Join us next time for more fascinating discussion about the wide world of molecular biology. Until then, cheers and good science.