Joint Session with AUTM - Fostering Entrepreneurship and Translating Academic Discoveries into Healthcare Products

Session Transcript:   
2021 Proof of Concept Network Annual Meeting: Joint Session with AUTM - Fostering Entrepreneurship and Translating Academic Discoveries into Healthcare Products

I think we're ready to kick off our next session. I think I see most people here. I'll make sure I see everybody. We have a great next session. We're going to spend the next hour and a half or so talking about entrepreneurial ecosystems, how those ecosystems build around and end up being complementary to the concept Proof of Concept Hub. And also why these ecosystems they're various component parts and the people that drive them are still important to taking these ideas that are funded by programs like the NIH go through some product development Proof of Concept but the need to additionally fill gaps with entrepreneurial education support services accelerator programs, Proof of Concept funding we'll touch it all here in this presentation and a fantastic discussion. I have some amazing panelists here with me, please bear with me on a little bit of background noise, I'm in a hotel lobby in New York, ready to go catch a flight. And, so hopefully you can hear me okay. But we're going to get to our other extremely experienced panelists here in a minute. They'll each introduce themselves as they present more about their own models. But, in short order, we have to solve the Director of Technology transfer at the blood institute. We have Laura Russell Halligan, she's the executive director of Launch Blue, and the Launch Blue accelerator in Kentucky. We have Daria Mochly-Rosen who is the founding and Director of the SPARK program, and Almesha Campbell the director at Jackson State University. Just a really strong group we have here. I'm going to spend the next three minutes just framing the conversation for us with a few slides if I can. Thanks. Hopefully you can see these okay. All right.

I like to call this, bring this conversation around what we can do in entrepreneur support organizations pinning the tail on the don't can I, a long tale productive on start up creation, here at the University of Kentucky, just introduce myself, the Anne associate vice President for research and innovation at the University of Technology. Overseeing the entrepreneurship programs, we took inventory back in 2016, we wanted to know where are our startups, what are they doing? We found 191 startups that started about over a 25 year period, at that point 63 of them were there. 49 of them were faculty managed still at that point. Here's where we get to the interesting stuff. We were successful. We continued to be successful in attracting SBIR grants, 55 of those start ups over time received SBIR grants or STTR grants, here's the problem, less than 20% of those that received SBIR funding had actually attracted private follow on funding. Even more of a problem, less than 10% of any of those had actually utilized entrepreneurial education programs, entrepreneurial support system programs, accelerator programs like I-Corps, mentorship programs we knew we needed to build out the systems. A higher level snapshot at the. We sit at a center point of a 250-mile radius an awesome innovation region, we have nine R01 institutions in a a mile radius, you can see research, almost 2,000 inventions, 500 patents. Close to 100 startups per year incubated out of those universities. We see ourselves in a innovation region. Kentucky is also an IDeA state. One of the issues of course that we know about some of our idea states is that we have less access to capital. That is common knowledge. You see a depiction of this here where some of the angle capital venture capital on the coasts, in the Great Lakes region, down below, the gulf coast, New Orleans region. There's not a lot. That's the largest venture fund in our state on the $25 billion in assets under management for venture investments.

We also work over this year I think in the annual meeting work with the start ups very different optional, social media or even service model start up. And so, those dynamics require different capital dynamics. And, so we have to be intentional about the way we work with them. Just stats about ideas space, we rely on SBIR because of that access to capital. Just so some trends here we looked at some of the AUTM datas that reported from institutions in IDeA states from AUTM, we'll hear from Laura, collect some of this data, we sifted through some of that to find out what's going on with IDeA states to try to pinpoint the types of services we needed to provide, there's been an increase it's everybody a four year period increase, like an IDeA state to start ups with only 3% increase of the big coast. If we look into that a little bit deeper, there's a 12.5% over that same period, 12.5% increase in startups creating that idea we're starting to focus more on start up companies. Benchmarked against only a 1% increase of national startups created for all startups that are reported on AUTM reporting universities. So, we're increasing our start up activity within IDeA states, this is fantastic to look at. 37.5% is the national increase in start ups operations not necessarily a bad thing. That seems like a bad thing. With no-go decision making, Proof of Concept, and those kinds of things, negative ideas decreasing starting operations could also be, it sounds like a good thing. It could be a asset that could be while we're taking on more SBIR money, the heavy increase in idea state reliance on SBIR/STTR, that money comes with less milestone based accountable time based activities, temporal measurements, where you're at, when you're at, when you're reaching certain milestones, there's not private investment on your board telling you you need to get there, so your money getting spent wisely. These are the mechanisms that we look too big into.

I love to show my faculty start up founders at the UK, hey, poor products is actually the fifth most likely reason that your startup could fit, you can just develop the technology, we have to look at the market needs, not having the right team, the third most prevalent issue according to this Forbes study on why startups fail. So we have to focus on other things within our ecosystem. So, as part of our NIGMS Hub, XLerator network, we launch this XOR program to help some of the university start ups across the country to focus on the team building, as a result of pinpointing the problem and getting specifically to some of the university start ups we need to solve for. Finally, we knew we needed to build an ecosystem. You've heard in the past couple of days about two of our NIH Proof of Concept center, Proof of Concept Network Hubs the KYNETIC Hub, the REACH Hub we run in partnership with the University of Louisville, the NIGMS network, the NIGMS IDeA Hub that we work collaboratively with the whole southeast, I have a shorter snapshot of the SBIR one to one platform. We relied in our region on the SBIR funding relative to private funding, Launch Blue is a accelerator program that filled the less step gap type of learning of these founders that we need to graduate from as they learn about the entrepreneurial process, Laura Russell Halligan will tell us more about that program of that program the complementary nature with our KYNETIC and XLerator network. The NIH Proof of Concept center. So that's a snap shop to frame our discussion about why there's a need to provide programs like this. So not everyone on this panel is talking about IDeA space, the point I'm making is we have to look specifically at who we are to look at the ecosystem support services that we provide and we're doing this the best we can. But lots of people across the country are doing amazing things like Almesha, Daria, Laura. So next I'll hand it to Laura Savatski from AUTM, the current share of AUTM, she's going to share a little bit about what AUTM is doing to support the other all reach of entrepreneurial activities for startups.

>> Thank you so much Ian for that kind of intro. I'm going to launch this next presentation. I'm here to talk to you for just a five-minute intro on what it is that AUTM does in this start-up ecosystem. I think of it like how does AUTM help you help start ups. So, as Ian mentioned, I'm the current chair of AUTM. Ian did not mention that he's the next chair of AUTM. Host our incoming chair or chair-elect. And what AUTM is a very large global society of tech transfer professionals. It is an association that is perhaps most known for educating and connecting and allowing some networking within the professional field of technology transfer, which is also known as knowledge exchange on a global basis. So what is our mission? Our mission really is to support and advance tech transfer worldwide. It's all about making each other successful. And so we spend a lot of time working on things like advancing our own networks, building relationships between people, building relationships between different sectors. So, one of the things I think that's important to note in the start up community is it really does take a village, it takes a lot of different expertise and AUTM is a place where people can come and connect and collaborate with one another so that these startups can ultimately be successful. Because as we know, there's everyone from economic development agencies, to venture capital networks, to tech transfer offices. They need legal help to become incorporated for the first time so there's a bunch of lawyers present. So startups really need to coalesce a large team of disparate kinds of expertise in order to be successful. And AUTM helps to form some of those networks.

So, the role of AUTM really is as the way I see it is it's a network of leaders envisioning the future of tech transfer. We're also providing education, one of the things that AUTM is most well-known for and well respected for is its real deep bench of educational materials, presentations, webinars, et cetera. There's a whole host of materials available to aid start ups directly or to aid tech transfer professionals to help start ups. And then I'll share just a little bit about the different kinds of data that AUTM gathers and reports on some of the best practices in the start-up community. So our envisioned future is really around this collaborative ecosystem to help advance research innovations globally. So we have about 3,000 different members in approximately 800 different institutions. AUTM's base of membership is universities and academic tech transfer. But as I mentioned -- that's a little bit over 50% of our total membership there are other members as well. There are law professionals, economic development agencies, venture capital and angel inventors that come and attend AUTM, et cetera. So AUTM has a holistic education model. I'll talk a little bit about the innovation lending cycle in a second. But AUTM's key competencies around education really focus on invention disclosure assessment, IP management, patent management, marketing, licensing. You see startups I highlighted there. Operations and then leadership.

So here's the tech transfer lifecycle that we all know. Start with research where you come up with this great ah-ha idea, your invention is identified. We at the tech transfer offices help to evaluate and help make that go-no-go decision on whether or not we deal further with this. We might proceed with patent protection, marketing of that innovation, licensing, product development, and that's when after the product is developed, the public has now use of this product. Jobs are created, there's economic growth and everybody gets all excited. Hopefully, those profits go into additional research and development through the royalty stream expert, the cycle continues. One of the things that AUTM does in the space is to collect data. This data really helps to show trends and things to keep your eye on in the future. So every year, we have a licensing and activity survey. This is available for purchase, if you are an AUTM member and you contribute to the licensing activity survey you get the data for free. There's also something really helpful called a stat database, so the STAT database is available to anyone for purchase that allows you to look back at this data from the very start. Every single bit and piece of that data, you can sort it and slice it and graph it in anyway or shape or form that you want. I'm going to show you one of the graphs from the licensing activity survey. And this is a graph on start-up activity. So, what you see from this is that start-up activity in general doubles approximately every ten years so there's the steady growth in start-up activity. And it's an increasingly part of any tech transfer offices and products and services that they offer to their local community.

So AUTM is providing and presenting lots and lots of educational data, educational programming, discussions, areas for collaboration amongst us as professionals. So I encourage you if you're not a member of AUTM, you're interested in the start up community to take a look at becomes a member, it's less than $400 a year, do you have e-groups, all kinds of communities available to you to discuss things with, ask questions, et cetera. Just a quick shot out as I'm wrapping up, AUTM's annual meeting is, end of February in New Orleans. We're excited to have an in-person meeting this coming year in 2022. If you haven't registered yet, get to it. Get busy. And with that, I will turn it over to the next person.

>> Thank you Laura. I think next we're going to go to Laura Russell Halligan to share a little bit about what she's doing with Launch Blue to connect in with us.

>> Thank you, Ian, thank you to the Proof of Concept Network for all of you, my co panelists to join the panel today, my name is Laura Russell Halligan I'm the executive Director of Launch Blue in the UK. Before moving to the University of Kentucky, I was privileged to work at MIT's innovation initiative on supporting the NIH startup ecosystem innovation there, I learned a lot from being involved in that ecosystem, I've been able to apply what I observed there to my work here in Kentucky, I only have five minutes, I'll seventh spend time talking about the Launch Blue activity, I spend time on developing innovation and entrepreneurship training at the UK. One goal is we want to build innovation training that's focused on proof of concept, and provides commercial education. We want to make sure we provide faculty staff opportunities and our community with entrepreneurship training, coaching and mentorship. We often support throughout the different stages of commercialization. We work with our partners as KYNETIC, XLerator network to make sure that these innovators and technologies have support throughout that commercialization process and dream, our goal has been a key factor in making Launch Blue a unique program. Somewhere in 2020 we haven't been around that long.

Since that time we have been able to support 52 start ups and innovative technologies through our new accelerator program, it's a co-short based program that's designed for innovators and higher education specifically, the program provides professional development and is a experiential learning for faculty and staff for the best commercialization path for the unique technology. We're able to offer this program than just the University of Kentucky because of the wonderful program with Monique and Kayla and Megan who you heard from earlier, were able to provide that to faculty innovation institutions across the state, innovators are able to can I net and learn from each other, it's one of the thing us love about that collaboration. So just the XLerator program is weeks long, we really focused on customer discovery to evaluate the program, we seek to learn about potential partners, any roadblocks or potential issues with adoption of the technology. We also focus on training innovators in lean product development and the technology adoption cycle creating a funding strategy with SBIR potentially innovative vestment capital, building out a team, that will be did he have it only important. The goal is really to be in technology commercialization, this is preparing for STTR SBIR, the commercialization plan that would make that application stronger just for SBIR but also for KYNETIC. That's a great program and resource that we have. Of course we have SBIR coaching through our colleagues over there at XLerator network. We also you know, the goal is creation of a startup or licensing the technology. The real key of success to our new accelerator program has been the opportunity it provides for our innovators our faculty innovators to work closely with our commercialization managers throughout the 12 weeks. Those commercialization managers act as coaching cohort innovators they're getting them feedback, guiding them through the customer process, helping them apply the concept learning through the cohort technology. Over those 12 weeks the manager and innovator are devising that commercialization strategy together. The innovator really begins to identify the tech transfer office and the commercialization manager as a partner and ally on their journey forward. This positive relationship continues on. At the end of the 12 week program, they validated the technology and identified a path through commercialization, they moved into the one year incubator and conduct additional discovery interviews and executed on the plan they developed together in the initial 12 week innovator program. To move forward and maintain that in that close relationship.

If the innovator has a start up path that's part of the funding strategy, they apply to the national pre-SEED accelerator program, which to us cusp on further developing a business model preparing them as a company to become investable. That accelerator program is welcome to non university start ups is a transition point of being on campus and out in the community and working with other entrepreneurs. We're incredibly lucky to have programs like KYNETIC, accelerator in partners with the UK, these are key concepts to Launch Blue by providing mentorship programming, resources, accessible online tools, all of those things. And of course, KYNETIC grant funding is really key. We've had several innovator whose have gone through our program at excel who are speaking really to strength tear application for funding through KYNETIC, we've had KYNETIC recipients go through the program because they're continuing to desire to learn more about commercialization and getting additional feedback as they try to move forward. So also, we've just had our first alumni who graduated from our preceded accelerator program two completed XLerateHealth. We hope to continue to see more companies speed up into that program as well to that national SEED stage accelerator program. Both partners are key in really providing that wider network of support and available resources throughout the commercialization journey. And we're able to be a resource and tool for their programs as well. XLerateHealth was great. We had Eugene onto our SBIR lab in the fall. He was able to connect with innovators and faculty from across the southeast region in that lab and offer his expertise and advice. We're really grateful to be able to have those resources to compliment the work that we do at Launch Blue. With that I will end. I hope I didn't go over my five minutes. I will pass it onto the next person.

>> Thank you, Laura, that was fantastic. We'll can I go in more a little bit more the complementary nature to have a program like Launch Blue where you have XLerator network, KYNETIC, a group of concept network Hubs that do so well at designing innovators bringing innovators forward, getting them engaged in a process, that proof of concept, something like Launch Blue, XLerator and look more about what it means to be a entrepreneur as they graduate, they keep going going into a natural accelerator program like XLerateHealth over the Launch Blue accelerator, we'll get more into I'll pass it to Almesha who will introduce herself for the 36th time to everyone here, everyone knows the rockstar Almesha is. She's been an incredible partner of ours that stayed through the XLerator Network Program which we'll talk about more specifically in the EnRICH program so Almesha. Please take it away.

>> Thank you, Ian, you're too kind. Hi again everyone. I want to formally introduce you to our program ENRICH engaging research for commercialization at HCBUs. I currently serve as the executive director for the program. So the program is led by Jackson State University, but with strong support from XLerateHealth and the University of Kentucky Office of Commercialization. Ian, Taunya, and others within that office have been very instrumental in helping us through the program. When we created the program as I mentioned previously in the other panel was because we wanted to impact equity, diversity, and inclusion. We wanted to make sure that faculty and students from historically black colleges and universities were able to understand the processes, practices and tools and resources that are needed to critically evaluate the commercial potential of new healthcare innovations. We wanted to make sure that they also knew that with limited resources, there are still things that they can do to get their ideas out from the lab to the market. So, of course, this is our website that you can go to, it's on the XLerator network website/EnRICH. We have information there about how to apply our programming, our curriculum as well as other aspects in our program that you can engage in as we move forward with the program. So we send out to all the HBCUs, we send from the administrative level all the way down to the student organizations in our recruitment efforts. Because, there are a number of HBCUs, but most of them are located in the southeast area. And so, we know that they are widespread in those areas and multiple in each different state that you're in. So for example, Mississippi has I think 6 HCBUs, that might be true for South Carolina, North Carolina having multiple not just one HBCU. So we knew that one, the program in initial stages has to be virtual. That way we can have more participation.

When we initially started the EnRICH program, the idea was to just serve the HBCUs that were a part of the IDeA states and quickly, when the other HBCUs started learning about the program, they wanted to be a part of it too. But extending it was okay because most of them were already a part of the region we were serving. So it did not take too much effort from us to expand that out. So we were selecting groups based on the potential for validation of concepts, the potential of impact on the stated goals, clarity, effectiveness of the video presentation. We ask for a video presentation because sometimes you want to see people in the element, you want to see their passion. You want to understand what it really means for them to participate in such a program. While these were the selection criteria, the initial stages we quickly realized that we had to pivot. Because not all the participants who come into the program that wanted to support were able to have products or technologies that were ready, or at any idea of how they could go and validate the concept or anything like that. So we really had to go at a lower level to assist them to get up to anything like this. So we changed our collection criteria to accommodate what we saw coming in in terms of the applications.

Our program is actually a 12-week -- it's a 10-week program that we have. I must say thank you Laura, has been very helpful to us and perfect in our pitch, with the initiative to get it started. We understood what we needed to do and what we need to expect from the participants as they pitched on week 10. So really week one is brief introductions about the program. Hopefully they would have already known from our Q&A because we hold several Q&As throughout prior to the start of the program so that administrators, deans, chairs, students and faculty can come in and just ask questions. So that required to register. So we make yourself available for an hour on those periods just for them to come in. And I am proud to say that we saw it moving from just students and faculty to more administrators coming in to get a clear understanding so they can send the director out to the different areas to the recruitment on the various campuses. We have a patent attorney Angela who's also on our board who does a very good job of talking about invention disclosures and intellectual property so they get a clear understanding of what they need to do in terms of disclosures and protection of IP. Move them through understanding how the tech transfer office works because the majority of them do not have a tech transfer office on their campus.

We talked to them about leveraging the TTOs in other institutions within the estate, in which all the XLerator networks can assist them with some of them and also provide resources to them to get started, even if it's just to recommend them to a patent office if there's no resources on the start. We walk them through the lien start of technology, we do four-weeks of the I-Corps program, because for us the natural fit since I'm the PI for the I-Corps site program at Jackson State thought that was a natural fit to get them into a program like I-Corps get them into other national programs, we talked about training them for those four-weeks in that process so they understand what's needed as they move forward. Of course Taunya Philips from the UK would come in and talk about start up formation and funding types. And then we work on teaching them how to pitch and get them in practice so that I can pitch in the final pitch competition. The pitch competition, why we call it a competition, we always tell them to relax, you just present. They can present about what they learned during the tweak process or much on the ideas how they develop from week one to week ten. So we always find that to be a really interesting presentation at the end. We give new faculty best pitch, student best pitch, then the coaches also select a coach choice and then, somebody fun may come up in the process of the presentation and we select another price. We give them cash prizes throughout that process for those that are named winners of the different categories that we selected. And fortunately, we won SBIR lab to market price, so we were able to leverage our prize to help with some of those prizes and with support from the University of Kentucky commercialization office, a great partner for us.

So some of our instructors are people who have done like the national you I-Corps program, coach and director grant warner from another HBCU. So it's good to see another person, not just Jackson State. He comes in and helped coach the four-weeks of the I-Corps style program. He does this nationally/internationally. So having him come in and do that is really helpful and mentioned Angela Grayson before. We have a few others like Mark that's also part of the German accelerator. And, our key forks basically are, team members that we consider on the level that's helping this process, as you see you see Ian here, Ian is everywhere. (Laughter) he's one of the brains behind the program. Then Tanya films, very helpful. She's also on our board, Eugene and Jackie Wilmont very helpful in terms of promotion of the program. Helping to make sure that we have the support that we need. And able to collaborate with them even further until we receive additional funding to get some of our participants when they're ready to go into SBIR and STTR phases in different things. So we are very fortunate for that and the support that we've had.

We've had great promotion. Forbes picked up the XLerator program, and we were able to get a lot of feedback from the other HBCUs once they saw this article. That's how some of the administrators realized that this may be something that if Forbes put this out online, maybe this is something that we need to have faculty and students engaged in. Then we do a very good job of working with our marketing team to make sure we have the marketing lab rat to reach out to the other HBCUs because one thing we can see a flier email, they don't work, so we've had to go through some very creative ways to appeal to the students and different campuses. Sometimes like this flier may go out to Jackson State University. But if I send something out to North Carolina and I might have gotten permission that they have a student on their campus, so they understand how we're appealing to them. One last thing before I move on. What we found is that through the program, we give the participants an opportunity to give us feedback in real-time and also pre and post. We do pre and post tests of the program to find out what they like. The biggest thing we've heard in the last two years they want this on their campus, they want to do this on their campus even in a boot camp style in the summer give it. We're thinking of training the trainer model of this program so that they can have an offshoot of this program on their campuses and the EnRICH program would basically be the brand. We would still oversee the deployment of the program on their campuses, but we would be able to have someone on the campuses that's helping us. So it could be unique to their campus. So that's something we're looking to implement. But we're also looking at funding to continue working out the logistics, we're looking for other partners that are external to the team that I mentioned and external to NIH that we've gotten over the last two years, we're very grateful for that. With that I'll turn it back over to Ian.

>> Thank you, Almesha. You are such a rockstar! Your did he do indication to this EnRICH program to be honest your dedication to the EnRICH program is awesome, he founded the XLerator program that was a you think met need for students at HBCU, it was featured within Forbes in 12 months, she's done such a fantastic job with this. All right. So we're going to pass it over to last but not least, Daria Mochly-Rosen who is founder of another formidable program that has gone beyond even the place it was founded at Stanford. Other universities have founded. So well put together and so productive, so effective, that someone even adopted it. Daria, please tell us about the SPARK model of Stanford.

>> Thank you, I hope that you see my slides. So yes. I want -- thank you for the opportunity to introduce spark to you. The program is toused on making sure that academic discoveries benefit patients in society. We see these are social responsibilities, academic professors. So I am a chemist by training, doing basic research. In 2004 I started a company because the ideas we have developed in the lab we found no partners in industry. I felt a year in industry, we have really not prepared to do sort of technology transfer to industry. So when I came back, I started this program, which now it's almost 16 years in opposition. I unfortunately cannot move my slides forward. There we go. What we are trying to address is the challenges.

>> I don't know if you see the slides just to jump in. I see a PDF.

>> It's a slide version on. I try again.

>> It looks like we sow a screen,

>> You see the slides? So, yeah. So, as I said, spending a year in industry taught me a great deal about everything that I don't know, I'm still learning. The key things were some of the challenges that prevent good ideas from moving to industry. First of all, the academic projects are viewed as really premature, especially in the eyes of potential licensors, existing pharma, but also from the BC point of view. Oftentimes the indication that is chosen is not realistic or appropriate because there is a better solution already. Sometimes they unfortunately the findings are not reproducible. That's a big challenge for us. And then, we in academia are really not preparing our faculty and students for transition research. We really don't know what is required for that. There's the challenge that was discussed a bit in the previous panel which is that translational research is really not in line with the academic world yet. Even though the NIH is making a nice effort to change it. The reality is that it's still a challenge. We should also recognize that professors in academia don't recognize the applied work that goes in industry. It's not because they have firsthand experience, but they view it from the outside as not intellectual; it's one foot in front of the other. Those are the challenges that we try to address in creating SPARK.

It was founded in 2006. It's providing education on a weekly basis. So we meet for two hours every week. And we discuss projects and have had discussions on and advice on these projects. We provide project manager and very little funding about $50,000 a project a year for these two years. The project, the program is mentored, or focused on students and faculty not only students. So now looking at our 15 years, 56% success rate, 56% of the projects that we take on are either being licensed to existing companies or to start up, or move to clinical studies. That success rate is what industry would consider success which is around 10%. That can be attributed to a list of things, things that we see in a environment where entrepreneurship is more welcome. I can tell you that from firsthand experience, still remains a challenge. The special space that our program has is our volunteer industry advisors. We have over 150 advisers that come and volunteer for a program. There are of course unpaid but importantly, there are CDA, about 30 or 40 of them come to every Wednesday night meeting. There is a huge number of people, what it does it cover comes quite a few of the challenges that I've listed earlier.

First of all there's a it brings scientists from industry and academia in one place. As a result of that the two groups that felt a cultural disconnect start to appreciate these important contributions. Unfortunately now it's a Zoom room still. Used to making a university campus right now, the picture I show you at the bottom is about half of the size of the room. About 100 people show up, 40 or them or so of industry as visors. Many of them participate for 15 years in the program. Very importantly, there is no hierarchy in the meeting. Even though we are Nobel laureates, or CEOs or companies, we recognize that great ideas can come from a student's just start or somebody that works at the bench. So it's important that there is to hierarchy and importantly, we do not try to reach a consensus. The work is still done within academia. We recognize that industry's high failure is in part because of the need to reach a consensus. When you reach a consensus, you tend to take the least risky program. The least risky solution. Whereas if you are using this approach, an opportunity to take a risk, there is a chance that you breakthrough and make a discovery or development that otherwise would be overlooked. And very importantly, unlike incubators, we don't take a single inventor, surround them by a few advisers, train them in the process and you move out and start with the next group. We do it at the same time. And projects can be at various stages of development. But they come from each other -- they gain from each other's experience, both because of successes, but more importantly from the failures. I think that there is so much more learning from the failures. And we also gain advice from industry experts that have failed themselves.

So, here you have a very rich ground to progress projects in a way that is educated by past experience and cultural academic, cultural risk taking, which is rather important in any innovation, but especially in medicine. So the program has attracted attention. We are now in about 60 institutes throughout the world. Some of the institutes have been sparking now for a while. Others have just started. I want to point out some things I mentioned earlier. Oftentimes we were told, oh, you have 56% success rate because you are at Stanford, and you are around a very high biotech Hub as well as a lot of investors. This is true. But we now find for example both in Finland, Taiwan there was no biotech, almost no venture capital. They have now around 40% success rate. It is possible to do it anywhere. And for sure, we recognize that good ideas can come up anywhere and so, it's rather important that if we are dedicated to improve healthcare, we need to think about improving healthcare through translation of innovative ideas anywhere in the world. So I'm very happy that this program is now picking up fire elsewhere.

We have wrote a book that is providing a guide and importantly also sharing a lot of kind of information that we learned doing translational research including mistakes that have happened and so on. It's a short book. I've been told by biotech start ups around our campus that some of them use it as their book, first book that they give a new employee. Importantly the program has provided education to our students and postdocs as well as to our faculty. So we have now faculty who are, shall we call them repetitive offenders, they keep coming with good ideas and start in other projects that translate to a company or a start up. But also, we prepare the workforce better through this educational program. We are now working on creating an online educational program still waiting for some more funding for it. We're working on a new addition for our book which is already now in several languages. So I'll stop here, I look forward to hearing some comments, questions from the panelists and the audience.

>> Daria, thank you so impressive to see all of that sparking. I also loved the verb "sparking" to see all of that fire as you put it all over the world. Really really impressive. So here's our open panel discussion part of this segment. And we've got some good questions lined up for some really smart people here with lots of experience. Daria, I'm going to start with the question with you. Given that you just talked about for example this volunteerism, the mentors that come in and work with your academicians certainly at some point you are bumping into working with, collaborating with, holding stands with the Stanford OTL, are you a part of the OTL. How do you work with each other, what are some bigger roadblock and a model that is somewhat outside of the OTL that twos directly with them.

>> Good question. So, I'm a fact will if I, I'm not an OTL. This program is a university program, not from the TTO. However we are working closely with OTL. Initially, the projects that were selected from IPs that was FAD not licensed. We looked at all the projects that were developed on the LAD cachet, from that we selected projects to help progress. Now, while we're working so closely with OTL so we meet with them three or four times a year looking at the programs that come in, and also telling them about the projects that are in our programs to make sure that they continue to file and that they support with a good IP, the projects that we feel are promising. Again and again we hear from faculty who file tell them oh, did you apply to spark, because that will tell us whether your project will miss properly support it. We are close partners to OTL. You ask about the challenges in that in our case Mississippi took, it was obvious to OTL, I am trusting what we do, I'm not in the business of licensing, I'm in the business of improving proof of concept, improving faculty and translational research. After a couple of days I realized that it's not obvious to me, we became more tightly connected on a regular basis. It's true with Kathy and now with Karen it's fantastic partners with the operation.

>> Good to see, that's important, a lot of people hear listening to this session work within the NIH Proof of Concept Network at various REACH Hubs, NCAI or IDeA Hubs that may not necessarily be inside of the tech transfer office, they have to find communication protocols, processing, ways to communicate, we have to know with our experience with KYNETIC program, identifies innovators oh who want to apply to the KYNETIC program, we have members of our tech transfer office, as well as the University of Louisville, Kentucky commercialization ventures program that have to coordinate with the KYNETIC project managers to ensure that there's a venture disclosure processes those kind of things lined up intellectual property information lined up so the evaluation for KYNETIC funding.

>> Maybe I can add to your point and actually in the previous panel there was a discussion about that. I think what really helps a park relative to the operations that you're describing. I am embedded among faculty, I have NIH grants, I have a research lab, I'm teaching, so I'm talking to them at the eye- level so they can't tell me I'm too busy with that. I have a grant, you're writing a paper, my students are writing because this is the same things that I'm dealing with. It's rather important also that you have the back of the university, that the university leadership understand that this is worthwhile activities. And again, people will say, oh, everybody is an entrepreneurial staff, no problems there. But it is definitely a program everywhere. Institutions are confused about conflict of interest and about what guarantees your promotion so on and so forth. There are challenges there. Finally there's issues continual issues of money. This program is running so cheaply and is benefiting the university. I mentioned how much money comes in the form of a startup. You can imagine a lot of it comes in forms of grants. Eventually if there are patents that are being licensed it comes back to Stanford. In the end it's always a challenge to fund our program. I hear the same thing everywhere else. And I see, you are raising your eyebrows, yes, we have endowment. But the money doesn't flow to us. We have to recognize that the challenges are actually quite common. It's good as a group we are trying to address them. The biggest challenge of course is education. Teaching the students and post faculty, what does it mean, how to promote it. That's the biggest challenge but also an achievement.

>> Exactly, thanks for sharing that Daria. I agree it does make a interesting dynamic, that you are faculty. So you can speak eye to eye as you said. He let me to it to Laura Russell Halligan. You are an adjunct faculty you've done this at MIT and now Launch Blue, the Launch Blue program managed by you were technically University of Kentucky staff, Office of Technology commercialization the program itself, serves not just UK start ups but other start ups, how do you ensure the Office of Technology commercialization?

>> Right. So, like I said, the commercialization managers are active in the cohorts. So, they are active in meetings, they just don't touch their technologies from the portfolio base, they work with other faculty innovators who are coming in and give their time sometimes to community start ups for their teaching. That close relationship is not only key to the success of technology moving through the program. But also make sure that during meetings, when we're talking about patents and making decisions, they have a firsthand knowledge of that technology, and experience with that innovator to say yes, highly committed. We've been researching, reaching out to industry, validating that this is a valuable technology in the market, the opportunity is there, we have a plan to move forward. That decision is much easier right. All of that communication with commercialization managers in the program, and those innovators that relationship is key and is also getting back to our IP office and our other folks in OTC.

>> Thank you Laura. I'm going to shift gears a little bit to the entrepreneurial culture. So very different models here represented we all talked about the growth of some of these models is fairly recent. SPARK is currently the longest standing the longest runway at this point relative to EnRICH and Launch Blue. Laura AUTM collects data on start up growth and has a stint across the global event, the growth in start up support services to fund the reporting and article link. What can you say about this, maybe the changing perspective at the universities about entrepreneurship and startup creation, what can some of that AUTM data that tell us about that perspective change?

>> Were you asking Laura or the other Laura?

>> This is very difficult, Laura S.

>> I think what the data really show is a shift in culture. And one of those slides that I showed was about IP lifecycle. And one of the final pieces of the lifecycle is the actual commercialization aspect. And that's where this big shift is happening. It used to be that technologies were licensed out to an existing growing concern. Nowadays in the last ten years and start approximately about 20 years ago I would say is that, much much more commonly, technologies really aren't ready to be licensed out to a growing concern yet. Because they still need development, de-risking, investment, all of the things that start ups are designed to do. And that's why we're really seeing this huge explosion in start-up activity, and start-up creation, licensing to start-ups et cetera. They become a really important output for all of us in tech transfer for these technologies that need a little more help. They need a little bit more encouragement along the way. Their product isn't quite there yet, it isn't quite finalized yet. Maybe they need to do more customer discovery. I thought it was really interesting Ian the slide that you showed from the study about why these startups fail. And, the number one reason, 42% said, you know, there's no clear market need for the product. And so, doing all of that work for customer discovery, they might have a really great idea, but the first product that they envision isn't the actual product that the market needs. They need something slightly different. Or they need it to be delivered in a way that it can be delivered in a different environment, say, a different laboratory setting or are a home use type of a thing. Whatever it is, what this is the role for start ups is to identify what those gaps are and what the technology needs to have happen to it. Because there's so many different avenues that have to get explored and when we don't have a technology that's proven enough yet, that's the exact spot that start ups can step in and help to create something out of this technology that's novel, addresses a real need, it's important for a future. But I have a question too. A follow-on question.

>> Please do. Go ahead.

>> Okay. My follow-on question is really to this group. One of the other things that was mentioned is that only a small amount of startups who get SBIR funding actually participate in some of these accelerator programs that were mentioned. Things like I-Corps or the programming that Launch Blue offers oh are the SPARK program itself, so I notice that my small shop, I work for a small office, dealing with inventors who have they're very very busy, they think they really know what they need, you have seen this happen and play out many times before as a tech transfer professional and you're trying to guide them along the way and point them in the path of these resources that they need. And a lot of times there's a bit of a failure to adopt. They don't really gap hold of something. What are some strategies that we can use, this is my question to the group here, what are some strategies that we can use to get our inventors and entrepreneurs to grab hold of these resources that are right in front of them and available for the taking.

>> Laura, this is probably bad form just because I'm the moderator I want to jump in first really quickly this is top of mind for us, a change we made within the transfer office, we saw the data we showed at the beginning, we've got 55 startups out of 190 that collected STTR or SBIR funding. And less than 20% of those that received that funding never actually received follow on private funding, less than 10% participating in programs like this. They all love to come to our office when they come to SBIR. We have developed a policy where they will not actually provide the support letters unless they engage with us, to learn more about the strategy for not just the grant writing, the grant seeking funds, the strategy, the use of the funds, do the commercialization market research so we can adequately write that into your proposal and then have a plan for what are you going to do next. Phase I to phase two, or even beyond, that's where our program comes in, we call it the start up license program, we launched it, it also goes with our license, we don't provide a license which is critical for getting the SBIR funding option, now we do, but you have to engage with us. Tech transfer is some of that leverage, it's important that we walk them down that, we got maybe data points this is why we have this problem. Anybody else.

>> Yeah, I guess going back to XLerator one of the first things that we do in the first cohort meeting is we talk about how grant funding is great, it's something that we should pursue as part of our funding strategy if it's a hit for them. It's very likely that they're going to have to seek other sources of capital in order to make sure that this technology gets from the lab out into the lab has the impact that they're having. We start with that understanding in mind, we know from the program they talk about how we develop that commercialization plan the SBIR pre-SEED XLerator, we have faculty who have come in to take SBIR who have raised investment funding have a team around our start up, people doing the things that we should be doing, investments at it, investment road models from the other institutions around the state they look up to and connect with. Also things like our SBIR lab, our person was in this fall, I plan to do that as a annual event open to can community, we talk about not how to apply as a SBIR how to utilize SBIR funds and investments, and also, programming like this, in order to be successful and the technology for it.

>> I think I can make a quick comment. Because we don't follow up on things that are making SBIR grants. I can tell you that we do follow up on how we get academic grants to do the work that they want to do, which is also usually NIH. It's about $7 for a dollar. So, they do well. So we don't guide them through that part. Also, I find again and again we see, tell us if they SPARK tell them they have been in SPARK. They have a better chance of getting funding because they were already vetted by industry experts. So, we have as I said, they also participate in the selection. They already said this is valuable. Maybe the last thing which is, echoed by both of you, the lawyer, two lawyers, we teach the first thing that we teach is to think about to start with the end in mind. In order, not what you have now, but where you are going and challenging where you are thinking you want to go is really where it's going. It's very difficult transition for faculty to start to think from the end to the beginning. But it's easy to understand. I need to know what the market is like, what are the competitions and so on. But, it's really part of the first element in training is think about the end. The patient, the market, the physician. The costs. All that. Yeah.

>> Thanks Daria, I appreciate it. So, I'm going to shift a little bit earlier about culture shift?

A perspective at universities we're seeing it through data and the reporting that AUTM collects. But we're also seeing specific examples at institutions and Almesha, you made one of those best examples at Jackson State University where you have through your intentional efforts, you developed a culture shift. You're seeing it right now in the programs that you have launched. So maybe talk a little bit about how you've accomplished developing and scaling some of these programs at a resource constrained institution, where you know, you don't have some of the resources that a Stanford has for example. But you've still been able to build programs, build capacity, and change some of that culture? How have you done it? What are some of the best practices for those at smaller institutions that are looking to build EnRICH and this type of thing.

>> That's a good question, Ian. I think a big part of it, I have to give credit to great collaborations like the University of Kentucky XLerateHealth and others that have reached out, or that the platform that I've been given through the EnRICH program to meet our people external to the network, that has built that type of, you know, it has inspired me even more because, I'm here and I see the gaps. I see that while we are under-resourced, I see that our students are eager to learn. I see that once given access some resources to people who have experience doing this, how much it can help them really start thinking beyond what their accustomed to, because most of our students our first generation college students, a lot of them come from under resourced neighborhoods that the entrepreneurs that they know are barber shops, food trucks, those -- barber shops, food trucks, they don't see a lot of tech commercialization or ownership in terms of that space in terms of start ups. Having to go from the very basics to explain the difference between a start up and a company, to start thinking about what can we do with our limited resources to change the entrepreneurial mindset and also to develop an entrepreneurial ecosystem within our university and our surrounding community and provide that type of support. So it took a lot of partnership efforts.

I'm going to be very transparent. When Tanya reached out about the XLerator network participating, I gave the letter of support to my institution, they looked at me like... that's not money, how is that going to benefit you? Do you have time to do that? I said here's what I see in the future, right. I'm looking at the connections. I'm looking at you know, being able to be a part of a network where people who are skilled in this area who have done it before or trying to do new things, that I can be a part of that type of innovation ecosystem that I don't have on my own campus. Then I can learn as much as I can and bring that back to my campus and kind of infuse it in this campus. And then look at what we had in, did we have the capacity to do anything? And what can they do to assist the tech commercialization side. Looking at our engineering program, our curriculum and different things, different things we can do to support each other, when I saw those gaps, I knew that I need to extend myself a little bit more to find those key partnerships that can really assist. The partnership is the key thing, while it may not have been the money, it's the fact that it's active participation, it's not just part of it saying it backwards, it's active participation, looking at the meeting, coming to Kentucky, going on a bourbon time and meeting people, making those connections that are very helpful. Not only that Ian, if I didn't meet you, may not have been actively involved in AUTM, I've been a member from many years. Now we're on the board that's given me more access. So not taking that access to just me alone, but looking at how I can plug in the faculty, the students, the communities in the different resources and moving forward, saying we're going to make this investment, we were intentional in what we're going to do to get started. We had to make a plan for over a five-year period, this is what we're going to do.

I tell you today. I'm highly participating with the University of Southern Mississippi on the global economy. I'm co leading the commercialization side of that new economy within the Gulf Coast region all because of having the EnRICH program and the I-Corps program, working with them to say while you may not have an I-Corps side and EnRICH on your campus, I'll do some training with your faculty or share resources. I'm part of the network, to figure out how can we participate even more and not just on the commercialization side, but plugging, who went to work on whether it's ocean friendly plastic, something in a different area that's impacts the Gulf Coast region, it's those type of things that we have to look at while we think that why we've seen that success, it's beyond what we thought would be initially and decide how to be intentional about what we want to see. That pipeline, those of you who have seen, I too, I to get a pipeline of our students, trying to get a tech transfer office, the career path. Ask those programs, talking in those departments saying, okay, thinking you major in biology, thinking that you want to become a doctor. You decide I don't want to do that, herself a current path for you right. Not only is that helping to build that ecosystem, it also talks about infusing EDI so five years from now you'll see more people of color as patent exact centers in the tech transfer office. It's very intentional, yes, my kids say I don't sleep. But, those are things that make me feel like I'm contributing to this whole global economy that we're all a part of.

>> The pipeline is so important. I saw the comment just come in, Almesha you always talked about the pipeline that's so critical. It takes time it takes time to effectuate the culture shift, it takes time. The commercialization ventures program that Monique you heard in the last panel was the executive Director of -- You know, we founded that program over 18 months ago. And, they spent the entire time building a pipeline of interest, right. That now it's turning into inventions, patentable filing, that's the pipeline, you have to spend time doing it. Speaking of the pipeline, we'll get to some of the attendee companies now. A great question about how you reach out to faculty, Richard Duke has asked from Columbia SPARK.

>> I'm telling you, how you started the program, how you come back from industry, I thought oh, I really knew nothing about what I actually experienced. I bet there are other companies that are actually clueless. I got them interested in this program, and it is catastrophic. I put a poster saying oh I'm starting this program, we have an adviser. Do you want to participate? I got a lot of information from people, including a very important somebody that started the biotech industry more or less saying, what are you doing? This is industry work, we shouldn't be doing it. Then, one of the loud voices was actually a friend of mine saying why don't you participate in the program. I knew he was very much against it. He was open minded and fair. He became my strongest advocate, my project failed, but he became the person that would talk to everybody else like you have to do that, you have to do SPARK. So I think that it is a process like that, it proves a process like that. Now people are -- the co director when I am, you know, oh, this idea when I come to SPARK, it's the other way around. It starts very slowly, only the success of the program makes, come to me more readily, it's a slow beginning.

>> We experienced Launch Blue is young we were founded last year, we have some of the experience that some of the folks who want to come to the program initially ended up loving it, we're talking about how impactful it was, and have been creating that word of mouth right, one faculty talking to another, saying I understand you're very busy, it's really worth the time to do the program, that's been very impactful for us.

>> Laura, you built your tech transfer operation at the blood institute, how did you develop your pipeline? How did you get the faculty buy-in over time?

>> It was a lot of just basic relationship management. You know, I was starting with a pipeline that was a small trickle you know, to be kind. It was not a whole lot. And so, I really had to build up my faculty to see me as their ally, their friend. I was doing things like helping them pre read their grants, celebrating when they got their first R01. So we had a mixture of faculty at the time. My senior faculty who I helped to enroll and say you know, help me watch out for inventions. I need your expertise. I need you to help me keep an eye on these young faculty and hint, hint, what I was really saying is I need you to really keep an eye on yourself, what you've got coming out of your laboratory. So at the beginning, it was kind of all about capture and getting things into the pipeline, when I think of start-ups, it's almost the same thing, the beginning it's all about capture. How do you -- when somebody has this little glimmer of an idea, maybe I'm thinking about this. They don't even come to you yet, how do you get them to actually take that first step into your office? How do you get them to view you as really welcoming on their side and sharing their success? And so, when you start cheering about everybody's successes, even if they're slightly off target, at least there's some success next to your cheering. That's how I started.

>> Yes, yes, yes and yes.

>> One the coolest things that we've done which seems so simple at the beginning was we launched what we call patentpalooza, we recognize any innovator for any small thing that they've done, we give them coffee mugs with their parents printed on it if they get a patent issued, and you know, just, celebrate the small wins, celebrate the wins. The customer focus service is a customer focused area approach, you have to approach it like that. I see two questions here from Richard that are directed to me. And they're both very related at least in my response to this. So I'm going to address them together. Richard has asked, you actually help manage the companies that actively participate, what is the failure of the SBIR awardee?'' The answer to the second question leads me to my response the first question, the failure of most of these that we dug into is a lack of management, really it is just a lack of experience and/or strategy and what that strategy needs to entail. It can't just be a technical strategy. It has to be a business strategy that benefits from the technical attributes that benefit from it. Because it's based on a lack of management experience, the key we do actively participate. We view not what we do as just tech transfer, but we're an incubator of these start ups. These are our babies, these are their portfolio companies. I realize technology is a faculty base. But we're helping to incubate these companies and get them enrolled in that. That's why we developed the USL program and Launch Blue so that the faculty can see that they're going through a program that was even external in location even as we go through some of this. They're learning from us about what they're headed next. So we participate. Then we also participate in the team building process to add to -- to solve for the lack of management assets. Team building is so critical. And the XLerator program that we launched, we have over 30 universities, it's the master platform to try to find experienced talent on the business side. They can come add that to the technical scientific experience of our faculty. They need to get to those places. Let me just toss this question to others here, Daria for companies that come through your program if they go on to get let's call it a SBIR/STTR or any other private funding. How involved do you remain or does the Stanford OTL remain?

>> So, SPARK is not doing anything about getting further funding for the projects nor do we beyond their board, or are involved in their negotiation with a second party, that's all TTO. But, what we find again and again that they come to us even after the company started with companies and requests for advice and so on, or introduction to experts, so we continue to stay committed to the faculty who come to us. But we are not -- the moment that they have investments we are disconnected and we are not involving negotiations. We are involved very much in the pitching. We help them, we do a lot of training, pitching and we have, SPARK has a special event in bio that we train people to pitch in and we make a lot of introductions. Beyond that, we are not in financing, not in negotiations, none of that. It's a bit different from your program, I understand that you fit a different need, there is a value in both. But I just want to use this to say that we are very happy to have other universities use our model. We have material that we can pass to you and help you figure out how to recruit advisers and so on, we're happy to share this information.

>> Thank you, Daria.

>> Almesha you raised your hand wanting to say something in the lack of management being a cause for some of the failures of your SBIR coverage. What's your experience there?

>> I didn't know I raised my hand. (Laughter). I think one of the things that we do when we come to the start up is that we go to an external organization that works with, find in CTOs and for them, and have them work through those types of training process, so we don't really handle that. Of course it's just me.

>> Thank you. Almesha. Let me dig deep into elements of best practice around proof of concepts or product development. So, the REACH Hub is focused on product definition studies supporting that kind of work. It's Proof of Concept work. It is product development work. But it can't happen in a silo. So everyone here is adept at experienced at providing other services and resources of training around that Proof of Concept product development timeline, what are the most important elements of those services to offer and is it more important to after it before they start the proof of concept product development process. I'll add one last layer as I mention team building. One of those services, is it important to team build before product development or after? Who wants to go first?

>> So before is always better than after everything. So we start with early -- you really have to get through all the parts so you will move forward in a straight line or as efficiently as possible. You brought up some things that were rather complex to answer. This is proof of concept. People use this for a variety of things, let's use one that rest matters, how do we make sure that the technology that the faculty has in mind is really proven to show that it will be effective in the final setting which is a clinical setting, not in animal, not in tissue. So, what matters there is therefore past successes and failures. If you are developing a cancer drug, you show that you're curing cancer in a rat, that is not guaranteed that you're going to do anything in animals -- in humans. That's a problem. Because that's what we do. We're all in academia. We do that. We use the models that we are allowing us to publish papers and so on. So what are the other things we need to think about? Is it biomarkers, targeted engagement, on and on, things like that? That's why it's important that we have all these advisers who tell us, no, this model is not going to help you. This Proof of Concept is essential. This element is essential to convince me to put money behind it. So you need really experts who have gone through this field who have seen both successes and more importantly failures to help us choose what is a critical thing that would show that this invention is worth investing in and developing further. And the most critical thing in our program, we constantly mention it is failing fast. For an academician we can publish a paper, go and our projects and still be promoted and so on. Not if you're trying to develop a product. So it's important to do the hard it's and most critical experiment first. And if it doesn't work, then change direction completely. Not beat a dead horse again. So those are the pieces I've learned from doing this. I'm glad you were mentioned, the staff you put up at the beginning start up in idea states are failing at a slower pace. They are actually failing less often or slower, no. I take that as a bad sign, I'm not failing fast enough, we're not milestone based or accountable enough. Other best practices and you can enter the before or after the product development question, Laura.

>> Yeah, especially when you're talking about the funding element that's really important. Faculty are going to need resources in order to test and make sure that this technology is going to meet the need in the market as well as connection to people in industry to talk to them and actually talk to the end user customers. As before as possible, in Excel we haven't been able to get those, no resources, actively during the program trying to plug them into XOR or to XLerator network, they have a great network of coaching and mentors as well. But funding, once they have that plan, how are they going to carry it forward. How do they have resources to go out there and test this? We'll be able to find product market fit. They'll have to have those resources, before ideally. But certainly, if not before, then that's something we actively are going to try to find for them and help them gain those resources.

>> I think we've come to the end of our time. I want to thank all of our esteemed panelists, stories, experience, what did Laurie say, something going to the meeting, get to it. Everyone keep going getting to it. Something is coming up in February. Thanks again, keep doing what you're doing. And we'll hand it over to those who are taking us on next to this annual meeting. Thank you everybody.

>> Thank you.

>> Thanks, Ian, thanks to everyone for such a great panel. It's really good to hear about all of your advice and things that are working, that haven't worked. It's always great for everyone to hear about those lessons and apply it to their own cases. So, we have the networking hour next. Again, this is our attempt to do a virtual networking. It's not the same as being in-person unfortunately. But we figured it would be great for any of the meeting attendees to have the opportunity to meet with people from the Hub centers in their region. So what we have done is we have divided, we have five rooms, one for people from NIH. So if you want to meet with someone from NIH, you can join that room. Then we have divided it into four rooms. Northeast mid Atlantic. There you'll get to meet with folks from DRIVEN, Rutgers, Long Island Hub and B-BIC. Western mountain room, REACH SPARK and UC-CAI. And market the Cleveland clinic and south room for Rick XLerator, University of Louisville KYNETIC. You have received the information for the link of each of the rooms. I see Cassidy is putting it in the chat book, we'll leave this room open if you get lost you can join this webinar find the link and go there. Yeah, I hope you all will join one of the rooms and talk to folks from different Hubs and centers. So you can interact with them. But it's been a great day. Thank you to all the panelists and all of the speakers for really engaging sessions. We'll see you all tomorrow at noon. Happy networking. The links in the chat. You also have calendar calls with those links. You can always come back to this room if somehow you're unable to get to the rooms.